POST LOSS/PROFIT ANNOUNCEMENT DRIFT

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Abstract

We document a failure of the market to price the implications of a current loss/profit for a future loss/profit. In a 120-day period following the quarterly earnings announcement date, a portfolio of firms with extreme losses (profits) exhibits a -7.6 percent (3.3 percent) abnormal return. These patterns in stock returns translate into an annualized return of approximately 23 percent on a hedge portfolio that takes a long position in an extreme profit firm quintile and a short position in an extreme loss firm quintile. In an effort to explain this finding, we show that this mispricing is related to differences between conditional and unconditional probabilities of losses/profits, as if stock prices do not fully reflect conditional probabilities in a timely fashion. A battery of supplementary tests show that this loss/profit effect is incremental to and more pronounced than previously documented earnings-related anomalies.

Keywords: Loss/profit mispricing; loss/profit predictability; accounting losses; accounting profits; earnings-based anomalies.

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1. Introduction

Market observers, academics, and regulators all seem to agree that investors consider earnings releases important corporate events and follow them closely. Consistent with this view, empirical studies have found that earnings, particularly when measured over long periods of time, explain the cross sectional variation in stock returns better than any other variable including cash flows and dividends. Notwithstanding the significant attention investors pay to earnings releases, however, academic studies have found, somewhat surprisingly, that investors fail to *fully* incorporate the implications of earnings news into stock prices in a timely fashion.

One strand of this literature (e.g., Bernard and Thomas 1990; Ball and Bartov 1996; Brown and Han 2000), has documented predictable stock price changes around future earnings announcements (up to four quarters ahead) and attributed this finding to investors' misperception of the time series process underlying standardized unexpected earnings (SUE). While the true time-series process of earnings is provided by the Brown-Rozeff (1979) model (i.e., an ARMA [1, 1] model in seasonal differences), modified to include a trend term, investors rely on a naïve seasonal random walk model, where expected earnings are simply earnings for the corresponding quarter from the previous year. Another strand of this literature (e.g., Sloan 1996) has documented accrual mispricing due to investors' misperception of the time-series process underlying the cash flows and accruals components of earnings. Sloan (1996, p. 305), for example, concludes, "The earnings expectations embedded in stock prices consistently deviate from rational expectations in the direction predicted by naïve fixation on earnings."

Although these two types of earnings-related anomalies are distinct from each other, the reason underlying them is quite similar. The common storyline is that investors use an overly simplified time-series model to forecast earnings.

The idea that humans, who are endowed with limited processing capacity, rely on overly simplified models, or imperfect decision making procedures (i.e., heuristics), to solve complex problems is rooted in the field of social cognition (e.g., Kahneman and Tversky 1973a and 1973b). This behavior, which follows because humans trade off correct inference and efficiency, leads people to make decisions based on only a subset of the information available to them. The partial use of information leads, in turn, to a cognitive bias, a phenomenon that has become recently an important area of inquiry in behavioral finance. According to this literature, the behavior of aggregate stock market, the cross section of average returns, and individual investors is inconsistent with the assumption that agents rationally apply Bayes law in their decision-making. Rather, predictions underweight or even overlook distributional information because they are typically made on the basis of a simple matching rule: "The predicted value is selected so that the standing of the case in the distribution of outcomes matches its standing in the distribution of impressions" (Kahneman and Tversky 1982, p. 416). Recent articles surveying the finance and accounting literature suggest the importance of this heuristic that Kahneman and Tversky call representativeness to theories of systematic stock mispricing (see Daniel et al. 2002).[1]

The premise that investors make decisions based on normatively inappropriate simplifications, as well as findings in prior research showing mispricing of earnings information, motivates us to further investigate investors' assessment of quarterly earnings releases.

[1] Representativeness is a tendency to judge likelihoods based on naïve comparison of characteristics of the event being predicted with characteristics of the observed sample.

However, unlike prior research that has focused on the pricing of earnings surprises (SUE) or earnings components (accruals and cash flows), we focus on the pricing of the sign of the earnings themselves, a loss versus a profit, and their magnitudes. Our motivation to take this new approach follows from two types of evidence in prior research: the importance to investors of a firm meeting the one penny profit threshold (see, e.g., Burgstahler and Dichev 1997; Degeorge et al. 1999), and the challenges investors face in valuing loss firms due to the low informativeness of reported losses regarding firms' future prospects (see, e.g., Hayn 1995).

Our empirical analysis tests two sets of hypotheses. Our first set of hypotheses concerns the relation between the conditional and unconditional probabilities of a loss/profit, and consists of two hypotheses. First, the conditional probability of a loss/profit is greater than the corresponding unconditional probability. That is, the probability of a loss in quarter q given a loss in quarter $q-1$ is higher than the unconditional probability of a loss in quarter q, and, similarly, the probability of a profit in quarter q given a profit in quarter $q-1$ is higher than the unconditional probability of a profit in quarter q. The second hypothesis states that the conditional probability of a loss/profit in quarter q is increasing in the magnitude of the loss/profit in quarter $q-1$.

The premise underlying these hypotheses is that losses/profits persist, rather than reverse quickly. They may persist, and more so at the extreme, because the underlying causes may be long lasting. For example, losses may follow from a firm's competitive disadvantage, ineffective entrenched management, or from overcapacity in the industry. Losses may persist also because they limit a firm's ability to take advantage of growth opportunities due to debt covenants (e.g., interest coverage) that become binding. Profits may persist because of a monopoly power, high barriers to entry, or exceptionally effective management.

Still, it is arguable that losses/profits may be short lived particularly in the extreme. For example, losses and particularly extreme losses may cause companies to restructure operations or replace a poorly performing management.[2] Profits may be transitory due to, among other things, competitive pressures, or demand shocks. In summary, the question whether losses/profits are persistent or transitory appears largely empirical.

Findings on the time-series properties of earnings in the extant literature provide only limited guidance on the persistence of losses/profits. This literature has focused primarily on serial correlation coefficients of earnings changes, as opposed to the behavior of earnings levels in general and extreme earnings in particular. For example, based on serial correlation coefficients, prior literature concludes that earnings changes reverse quickly, and more so if they are negative and large (e.g., Brooks and Buckmaster 1976; Fama and French 2000). However, while a large negative earnings change in one period which switches the firm's earnings from a profit to a loss tends to be followed by a large positive earnings change in the next period, the loss may persist over the two periods because earnings levels tends to follow a stationary AR(1) process with a positive autoregressive coefficient (see, e.g., Bathke and Lorek 1984; Brown and Han 2000).

Our second set of hypotheses concerns whether stock prices reflect fully conditional probabilities of a loss/profit in a timely fashion. Intuition underlying this hypothesis is straightforward. If, as findings in behavioral finance literature suggest, investors rely on overly simplified models to assess a firm's future prospects, they may assess the probability of a loss/profit to be released in quarter q based on their unconditional rather than conditional probability. If, as we hypothesize above, conditional probabilities are higher than unconditional

[2] For example, in October-November of 2007 top executives of a number of financial institutions--including Merrill Lynch & Co. CEO Stan O'Neal and Citigroup Inc. CEO Charles Prince--were replaced abruptly and major restructuring plans were put in place by their successors due to large losses incurred in that period.

probabilities, this type of behavior will result in an underestimation of the probability of a loss/profit in quarter *q* for firms with a previous loss/profit, and more so when the previous loss/profit is large. Consequently, post loss/profit announcement drift in stock returns will be observed, particularly for firms with high reported loss/profit, as investors revise upward their priors of a loss/profit in the period leading up to the earnings release of the subsequent quarter.

To test our two sets of hypotheses, we employ a broad sample of 434,407 firm-quarters that spans three decades, 1976 – 2005. We find, consistent with our first set of hypotheses, that conditional probabilities exceed significantly unconditional probabilities. For example, while the frequency of quarterly losses in our sample period is relatively small (less than 20 percent on average), its conditional probability given a loss in the previous quarter is much higher (approximately 64 percent on average), and the conditional probability of a loss given a profit is much lower (approximately 9 percent on average). Moreover, once the magnitude of the loss/profit is considered, differences between unconditional and conditional probabilities are even more pronounced. For example, conditional on a high loss (extreme loss quintile) in quarter *q-1*, the probability of a loss in quarter *q* is 82 percent.

Consistent with our second set of hypotheses, we find that over the 120-trading-day period following the earnings announcement day firms in an extreme loss quintile portfolio exhibit a negative drift (buy-and-hold size-adjusted return) of nearly 8 percent, whereas firms in an extreme profit quintile portfolio exhibit a positive drift of over 3 percent. Moreover, direct tests of the relation between differences between conditional and unconditional probabilities (our proxy for investor misperception of the probability of a future loss/profit) and future abnormal portfolio returns (the stock-price valuation error) clearly show the two are significantly correlated. That is, the higher the difference between conditional and unconditional probabilities the higher the future abnormal returns. Finally, a hedge portfolio that takes a long position in the extreme profit firms and a short position in the extreme loss firms generates approximately 11 percent abnormal return, which translates into an annualized return of approximately 23 percent. Importantly, this superior abnormal return is more substantial than, and incremental to the returns generated by previously documented accounting-based trading strategies, most notably the post-earnings announcement drift, the accruals, and the book-to-market.

Our findings contribute to two literatures: the literature on the time series properties of earnings and the literature on mispricing of earnings. With respect to the former, empirical evidence has demonstrated the importance of the loss/profit threshold for investors, and the difficulty they face in valuing loss firms. Still, extant literature on time series properties of earnings generally has focused on the predictability of earnings by estimating serial correlation coefficients of earnings changes. In contrast, we examine the predictability of losses/profits by studying their conditional probabilities. This new focus on the predictability of earnings *signs*, rather than on the predictability of earnings *changes*, provides important new insights. For example, although the frequency of losses is rather small, their conditional probability is substantial and increasing, not decreasing, in extreme earnings. Consequently, assessing the persistence of losses based on their unconditional probability, or on serial correlation coefficients of earnings changes, may lead to the conclusion that they are transitory (mean revert quickly), whereas considering their conditional probability leads to the opposite conclusion that losses are unlikely to disappear quickly, particularly when they are large.

Our second and more important contribution, the one related to the literature on mispricing of earnings, concerns uncovering a new stock-return anomaly related to the pricing of earnings, which is incremental to, and more pronounced than, previously documented earnings-related anomalies. Our findings also offer a behavioral explanation for this anomaly, which is consistent with an assertion in behavioral finance theories that due to their limited processing ability investors rely on partial information when pricing stocks, and consequently make systematic valuation errors.

The next section describes the data. Section 3 develops our hypotheses and outlines the methodology. Section 4 reports the findings from testing our two sets of hypotheses. Section 5 delineates the results from a battery of supplementary tests assessing the relation between the superior returns from the loss/profit strategy and those of previously documented accounting-based trading strategies. The final section, Section 6, summarizes our primary findings.

2. Data

2.1. Sample selection

The data are obtained from the following four sources: the Compustat quarterly database, the CRSP daily returns database, the Institutional Brokers Estimates System (I/B/E/S) database, and Thomson Financial's CDA Spectrum database. Our analyses include a set of primary tests followed by three sets of supplementary tests. The sample selection procedures for both types of tests are summarized in Table 1.

For our primary tests, those related to our two sets of hypotheses, the sample period spans from fiscal years 1976 through 2005 (120 fiscal quarters). To be included in the primary tests' sample, a firm-quarter must satisfy the following three requirements. First, it must have the following data available on the Compustat quarterly database: earnings before extraordinary items and discontinued operations (Compustat Quarterly data8) in quarter *q* and total assets (Compustat Quarterly data44) in quarter *q-1*. This requirement yields 630,997 firm-quarters covering 20,087 distinct firms. Second, each firm-quarter must have return data available in the CRSP daily returns database. This requirement further reduces our sample size to 512,193 firm-quarters covering 16,449 distinct firms. Third, in order to eliminate thinly traded stocks, we exclude all firms with stock prices five days prior to the quarterly earnings announcement date below $5 in year 2005. This threshold is decreased by 8 percent annually for earlier years to account for stock market appreciation. This final data requirement further decreases the sample size by 77,786 firm-quarters (1,138 distinct firms). Thus, our final sample for our primary tests consists of 434,407 firm-quarters, from 15,311 distinct firms.

The first set of supplementary tests uses the primary tests' sample and imposes additional data requirements to compute standardized unexpected earnings (SUE) in quarter *q*, i.e., a firm-quarter must have 12 consecutive quarters of data for earnings per share excluding extraordinary and discontinued operations (Compustat Quarterly data9). This additional data requirement results in a sample of 329,935 firm-quarters (12,242 distinct firms).

The second set of supplementary tests uses the primary tests' sample and imposes additional data constraints to compute quarterly accruals, measured directly from the cash flow statement. The required data to compute accruals are: income before extraordinary items and discontinued operations (Compustat Quarterly data76) in quarter *q*, net cash flow from operating activities (Compustat Quarterly data108) in quarter *q*, extraordinary income and discontinued operations (Compustat Quarterly data78) in quarter *q*, and total assets (Compustat Quarterly data44) in quarters *q* and *q-1*. Due to the unavailability of cash flow statement information prior to 1988, this sample spans the 18 year period, 1988 – 2005. The additional data constraints results in a sample of 237,796 firm-quarters (10,436 distinct firms).

The third set of supplementary tests uses the primary tests' sample and imposes additional data requirements to compute book-to-market value of equity ratio in quarter *q-1*. The required data are: common equity (Compustat Quarterly data59), common shares outstanding (Compustat Quarterly data61), and end-of-quarter closing stock price (Compustat Quarterly data14). These additional data requirements result in a sample of 393,017 firm-quarters (14,314 distinct firms).[3]

2.2. Variable definitions

We consider three alternative definitions for our earnings variable. The first definition is earnings before extraordinary items and discontinued operations (Compustat Quarterly data8). The second definition we consider is earnings before extraordinary items, discontinued operations, and special items (Compustat Quarterly data8 – Compustat Quarterly data32), and the third definition is net income (Compustat Quarterly data69).[4]

Along the line of previous research on earnings-based anomalies (e.g., Bernard and Thomas 1990; Sloan 1996), we measure cumulative abnormal returns as buy-and-hold, size-adjusted returns, inclusive of dividends and other distributions. We calculate size-adjusted returns by deducting the corresponding value-weighted return for all available firms in the same size-matched decile, where size is measured using market capitalization as of the beginning of

[3] We also consider the relation between the loss/profit effect and institutional ownership, analyst coverage, and firm size by replicating the tests reported for the book-to-market effect after substituting the book-to-market variable with each of these three variables. The results from these tests are discussed briefly below. At this point we note that the sample size for tests involving institutional ownership (retrieved from the CDA Spectrum database) and analyst coverage (retrieved from the I/B/E/S database) are reduced, as expected, by as much as 87 percent relative to our primary tests' sample size, and consequently are biased towards larger and more profitable firms.

[4] All three measures are scaled by total assets at the end of the previous quarter (Compustat Quarterly data8) to alleviate a potential heteroscedasticity problem that may arise when earnings data are pooled across firms and over time. Since the results from the tests that follow were robust to the earnings definition, we tabulate in the paper only the results based on earnings before extraordinary items and discontinued operations (the first definition).

the most recent calendar year. If a firm delists during a future return window, we set the remaining return to zero.[5]

As in previous research (e.g., Bernard and Thomas 1989, 1990), standardized unexpected earnings (SUE) are generated via a seasonal random walk with a drift model. More specifically, for firm *i* in quarter *q*, we first estimated the model by using the most recent 12 quarters of data (i.e. the estimation period spans from quarter *q-12* through *q-1*). We compute $SUE_{i,q}$ by taking the difference between the reported quarterly earnings per share and expected quarterly earnings per share generated by the model, scaled by the standard deviation of forecast errors over the estimation period.

Accounting accruals are measured directly from the cash flow statement, as in prior research (e.g., Hribar and Collins 2002), where they are defined as the difference between income before extraordinary items and discontinued operations and net operating cash flows from continuing operations, scaled by average total assets. A firm's book-to-market ratio is defined as book value of equity divided by the firm size at the end of the preceding fiscal quarter, quarter *q-1*. Firm size is the product of the number of shares outstanding and the closing share price as reported in Compustat.

Institutional ownership is defined as the percentage of shares outstanding held by institutional investors as reported in the SEC 13f filings available quarterly in the CDA Spectrum database. In order to eliminate stale information on institutional shareholdings, we use the latest holdings reported between the previous quarter's earnings announcement date and the current

[5] Only a very small number of firms delist (less than 0.1 percent for our longest window, [1, 120]), which is not surprising given the length of our return windows. Still, as a sensitivity check we calculate the remaining return for delisting firms by using the delisting return from the CRSP database, and then reinvesting any remaining proceeds in the appropriate size-matched portfolio. The results, not tabulated for parsimony, were indistinguishable from the tabulated results.

quarter's earnings announcement date. Analyst coverage is measured as the number of analyst forecasts in the latest consensus quarterly earnings forecast for the current quarter prior to the earnings announcement as reported in I/B/E/S. We require that the latest consensus quarterly earnings forecast date be after the previous quarter's earnings announcement date.

3. Hypotheses Development and Methodology

3.1. Primary hypotheses and tests

Our first set of hypotheses concerns the comparison of conditional and unconditional probabilities of a loss/profit. For our first test, we employ a chi-square test on a 2 x 2 contingency table to test the hypothesis that the conditional probability of a loss is greater than the unconditional probability of a loss (Hypothesis H1). We design a contingency table in which the rows correspond to the frequency of a loss/profit in the previous quarter, quarter $q-1$. The columns of the contingency table correspond to the frequency of a loss/profit in the current quarter, quarter q. Since our hypothesis is one-sided, we compute a z-statistic, which is defined as the signed square root of the chi-square statistic. The distribution of this z-statistic is approximately standard normal (see Conover 1980, pp. 145-146). Our second test involves the hypothesis that the conditional probability of a current loss/profit is increasing in the magnitude of the previous loss/profit (Hypothesis H2). To test this hypothesis, we once again employ a chi-square test. We design a 5 x 2 contingency table with quintiles of loss/profit in the previous fiscal quarter as rows and frequency of loss/profit in the current quarter as the columns. We calculate a chi-square statistic to test independence (Conover 1980, pp. 153-156).

The second set of hypotheses concerns whether stock prices reflect fully the conditional probabilities of a loss/profit in a timely fashion. For our first test, we partition all firm-quarter observations into two portfolios: a loss portfolio containing all firms with negative earnings and a profit portfolio containing all firms with positive earnings.[6] For each of the two portfolios, we compute equally-weighted, buy-and-hold, size-adjusted returns over the three windows, [-2, 0], [1, 60] and [1, 120], where day 0 is the quarterly earnings announcement date.[7] We then compute the return spread between the two portfolios, and expect this spread to be significantly positive (Hypothesis H3).

Next, loss firms and profit firms are separately ranked into five quintiles from smallest earnings, i.e. "High Loss" and "Low Profit" for loss firms and profit firms, respectively, to largest earnings, i.e. "Low Loss" and "High Profit" for loss firms and profit firms, respectively.[8] As before, we compute, for each portfolio, equally-weighted, buy-and-hold, size-adjusted returns over the three windows, [-2, 0], [1, 60] and [1, 120], where day 0 is the quarterly earnings announcement date. We then compute the spread in buy-and-hold size-adjusted returns between the two extreme portfolios: the High Loss quintile and the High Profit quintile. As before, we predict this spread to be significantly positive (Hypothesis H3).

Recall that Hypothesis H2 predicts that the differences between conditional and unconditional probabilities are increasing in the magnitude of the loss/profit. We thus expect the spread between High Loss and High Profit portfolios to be greater than that between profit-firm and loss-firm portfolios (Hypothesis H4).

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[6] A negligible number of observations (less than one tenth of a percent of total number of observation) with zero earnings were excluded from this analysis. The inclusion of these observations left the results virtually unchanged.

[7] To ensure meaningful sorting, we require a minimum of 300 observations per portfolio. This requirement was not binding for any of our portfolios throughout the study.

[8] Along the lines of prior research on earnings-based anomalies (e.g., Bernard and Thomas 1990; Ball and Bartov 1996), we sort firms into loss and profit quintiles every fiscal quarter based on reported earnings in that quarter. One advantage of this choice is that it is consistent with prior literature. We hasten to note, however, that this choice may involve a look-ahead bias. To assess the sensitivity of our findings to this choice, we repeated our primary tests based on cut-off points from the previous quarter's earnings distribution. Our results remain unchanged.

Finally, we test directly for a relation between future abnormal returns, our measure of the valuation errors, and the difference between conditional and unconditional probabilities of a loss/profit, our measure of investor misperception of the likelihood of a future loss/profit underlying the error in the valuation of losses/profits. To test for this relation, we compute for each portfolio the difference between the conditional and unconditional probability of a loss (loss subsample), or a profit (profit subsample), based on the results in Table 2 and Table 3. Then, for each subsample we compute the correlation between the two measures: the portfolio returns and the differences in probabilities. If stock prices fail to reflect the implications of losses/profits for future losses/profits because investors rely on unconditional rather than conditional probabilities, these two measures should be significantly correlated (Hypothesis H5).

3.2. Supplementary tests

Our supplementary tests explore the relation between the stock-return performances of the loss/profit strategy and previously documented accounting-based trading strategies. Specifically, we test whether the loss/profit strategy is different from, and incremental to, the post-earnings announcement drift, the accruals anomaly, and the book-to-market (value-glamour) anomaly.

In order to compare the performances of the loss/profit strategy and the post-earnings announcement drift (SUE) strategy, we begin by replicating the SUE strategy in our sample. For each fiscal quarter q, all firm-quarter observations are classified into five quintiles from smallest SUE ("Low SUE") to largest SUE ("High SUE"). We compute the difference in buy-and-hold size-adjusted returns between the two extreme portfolios, High SUE and Low SUE, over the three windows [-2, 0], [1, 60] and [1, 120], where day 0 is the earnings announcement date of quarter q.

Next, in order to calibrate the relative importance of the loss/profit effect and the SUE effect, we first partition all firm-quarter observations into two groups, loss firms and profit firms, and then sort observations within each group into five SUE portfolios using the original SUE quintile rankings. We denote the portfolios with loss (profit) firms that belong to the lowest SUE quintile Low SUE^L (Low SUE^P) and those in the highest SUE quintile High SUE^L (High SUE^P). We compute the difference in buy-and-hold size-adjusted returns between the two extreme portfolios, High SUE^P of the profit firms and Low SUE^L of the loss firms.

While this test provides insights on the relative importance of the loss/profit effect and the SUE strategy, it does not allow inferences on whether the two strategies are independent. To demonstrate that the loss/profit strategy is incremental to the post-earnings announcement drift, we examine the loss/profit strategy after controlling for the SUE effect. This examination involves forming portfolios based on the intersection of the two independent rankings of earnings and of SUE for each fiscal quarter *q*, for loss and profit firms separately. We then compute the difference in buy-and-hold size-adjusted returns between the two most extreme loss/profit portfolios, one containing firms in the highest loss quintile and the other containing firms in the highest profit quintile, for each SUE quintile separately. In other words, we test for the loss/profit effect after controlling for the SUE effect. Next, we employ a similar methodology to examine the relation between the loss/profit strategy and the value-glamour and accrual anomalies, using book-to-market value of equity and accruals as classification variables, respectively, instead of SUE.

Finally, to assess the incremental effect of the loss/profit strategy *simultaneously* over the post-earnings announcement drift (SUE) strategy, the value-glamour strategy, and the accruals strategy, we use a multivariate regression setting. More formally, we estimate the following regression:

$$CAR_{i,q,[1,120]} = a_0 + a_1 * Loss\_Profit_{i,q} + a_2 * SUE_{i,q} + a_3 * BM_{i,q} + a_4 * Accruals_{i,q} + e_{i,q} \quad (1)$$

where $CAR_{i,q,[1,120]}$ is the buy-and-hold size-adjusted returns for the window [1, 120], where 0 is the earnings announcement date of quarter q, $Loss\_Profit_{i,q}$ is the quintile ranking of firm i based on earnings before extraordinary items and discontinued operations in quarter q scaled by total assets in quarter $q-1$, $SUE_{i,q}$ is the quintile ranking of firm i based on standardized unexpected earnings in quarter q (generated using a seasonal random walk with drift model), $BM_{i,q}$ is the quintile ranking of firm i based on the ratio of book-to-market value of equity at the end of quarter $q-1$, and $Accruals_{i,q}$ is the quintile ranking of firm i based on accruals scaled by average total assets in quarter q. The quintile rankings for all rank variables are determined every quarter based on the distribution of the underlying variables in the corresponding quarter. Each rank variable is scaled to range between zero and one. We estimate Equation (1) using two alternative methods: one is based on pooled data across firms and over the sample period, and the other on the Fama and MacBeth (1973) procedure, i.e. we estimate Equation (1) separately for each quarter, and then report the time-series means and t-statistics of the coefficients from the quarterly cross-sectional regressions.

4. Tests and Results: Primary Tests

4.1. Tests of the relation between conditional and unconditional probabilities

We begin the empirical analysis by testing our first set of hypotheses that the conditional probability of a loss/profit exceeds the corresponding unconditional probability of a loss/profit.

Table 2 reports the results from conditioning the earnings sign in quarter q on the sign of prior quarter earnings (quarter $q\text{-}1$), using a one-sided 2 x 2 contingency table test. Recall that our first hypothesis (H1) states that the conditional probability of a loss is greater than its unconditional probability, and, equivalently, that the conditional probability of a profit is greater than the unconditional probability of a profit. More formally, this hypothesis may be stated, in the alternative form, as follows:

$H1_{A1}: P(Loss_q) < P(Loss_q \mid Loss_{q-1})$

$H1_{A2}: P(Profit_q) < P(Profit_q \mid Profit_{q-1})$

Before discussing the results from the 2 x 2 contingency table test, there are three statistical points to notice. First, the contingency table statistic tests whether $P(Loss_q \mid Loss_{q-1}) > P(Loss_q \mid Profit_{q-1})$, and $P(Profit_q \mid Profit_{q-1}) > P(Profit_q \mid Loss_{q-1})$, which is identical to testing $H1_{A1}$ and $H1_{A2}$, respectively.[9] Second, since our test is one-sided, it employs a z-statistic, which is defined as the signed square root of a chi-square statistic. The distribution of this z-statistic is approximately standard normal (see Conover 1980, pp. 145-146). Third, $H1_{A1}$ implies $H1_{A2}$ and vice versa, so the two hypotheses are tested simultaneously.[10]

Reading across Table 2, three salient points emerge. First, the conditional probabilities greatly exceed the unconditional probabilities. For example, while the unconditional probability of a loss is 19 percent (76,922 divided by 405,825), the probability of a loss in quarter q conditional on a loss in quarter $q\text{-}1$ is 64 percent (48,143 divided by 75,017). Likewise, the unconditional probability of a profit is 81 percent (328,903 divided by 405,825), whereas the

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[9] Note, for example, that:

$$P(Loss_q \mid Loss_{q-1}) > P(Loss_q) = P(Loss_q) * P(Loss_q \mid Loss_{q-1}) + P(Profit_q) * P(Loss_q \mid Profit_{q-1}) \quad (2)$$

$$P(Loss_q \mid Loss_{q-1}) * (1 - P(Loss_q)) > P(Profit_q) * P(Loss_q \mid Profit_{q-1}) \quad (3)$$

$$P(Loss_q \mid Loss_{q-1}) > P(Loss_q \mid Profit_{q-1}) \quad (4)$$

[10] This follows because: $P(Loss_q) + P(Profit_q) = 1$, $P(Loss_q \mid Loss_{q-1}) + P(Profit_q \mid Loss_{q-1}) = 1$, and $P(Loss_q \mid Profit_{q-1}) + P(Profit_q \mid Profit_{q-1}) = 1$.

probability of a profit in the current quarter conditional on a profit in the previous quarter is 91 percent (302,029 divided by 330,808). Second, our one-sided statistical test for differences in these conditional and unconditional probabilities yields a z-statistic of 350.02, which is highly statistically significant. Third, the difference between the conditional and unconditional probability of losses, 0.45 (0.64 minus 0.19), is substantially greater than that of profits, 0.10 (0.91 minus 0.81). This finding is interesting because it implies that the post *loss* announcement drift would be more pronounced than the post *profit* announcement drift, if, as we hypothesize, stock prices reflect unconditional rather than conditional probabilities.

Recall that our second hypothesis (H2) asserts that the conditional probability of a loss/profit in quarter *q* is increasing in the magnitude of the loss/profit in quarter *q-1*. An empirical implication of this hypothesis, in terms of the contingency tables reported in Panel A and Panel B of Table 3, is: $P(Row\ i,\ Column\ j) \neq P(Row\ i)*P(Column\ j)\ \ \forall\ i\ and\ j$. We test this implication using a chi-square statistic with four degrees of freedom, $\chi(4)^2$.[11]

Consider, first, the results displayed in Panel A of Table 3, which focuses on our loss subsample, i.e., sample firms with a loss in quarter *q-1*. The results indicate a clear pattern: the higher the loss in quarter *q-1*, the higher the probability of a loss in quarter *q*. For example, out of 14,958 firms in the highest loss quintile in quarter *q-1*, 12,280 (82 percent) report a loss in quarter *q*. In contrast, only 6,731 firms (45 percent) in the lowest loss quintile in quarter *q-1* report a loss in quarter *q* quarter. A $\chi(4)^2$ test of independence rejects the null that a loss in quarter *q* is independent of a loss/profit in quarter *q-1*; the $\chi(4)^2$ statistic is significant at the 0.01 level.

Panel B of Table 3 displays the results for the profit subsample, i.e., sample firms with a

[11] For a discussion of this test, see Conover (1980, pp. 158-159).

profit in quarter *q-1*. Similar to the pattern observed in Panel A, the number of firms with a profit in quarter *q* increases monotonically in the magnitude of the profit in quarter *q-1*, from 56,371 (85 percent) for the lowest quarter *q-1* profit quintile to 62,270 (94 percent) for the highest quarter *q-1* profit quintile.

Finally, the similarity in the correlation between previous and current earnings signs between the loss and profit subsamples notwithstanding, there are two conspicuous dissimilarities between the results presented in Panel A and Panel B. First, the difference between the conditional and unconditional probability of a loss for the High Loss portfolio, 0.63 (0.82 minus 0.19), is much more pronounced than the difference between the conditional and unconditional probability of a profit for the High Profit portfolio, 0.13 (0.94 minus 0.81). If, as we hypothesize, investors rely on unconditional rather than conditional probabilities, the mispricing should be more pronounced for the High Loss portfolio than the High Profit portfolio. Second, the variation among portfolios in the conditional probability is much more pronounced in Panel A. For example, for the loss-firm subsample (Panel A) the difference in conditional probability of a loss in quarter *q* between the two extreme quarter *q-1* loss quintiles is 0.37 (0.82 minus 0.45), whereas for the profit-firm subsample (Panel B) the difference in conditional probability for a profit in quarter *q* between the two extreme quarter *q-1* profit quintiles is only 0.09 (0.94 minus 0.85). This, of course, implies that the stock-return spread between the two extreme loss portfolios would exceed the one between the two extreme profit portfolios, if stock prices do not fully reflect conditional probabilities.

4.1.1. Discussion of the results

Recent findings have demonstrated the importance of the one penny profit threshold (e.g., Degeorge et al. 1999; Brown and Caylor 2005) and the difficulty investors face in valuing loss firms (e.g., Hayn 1995). This motivates us to examine the predictability of losses/profits, which is distinct from the focus of prior research on the predictability of earnings changes. Specifically, prior studies (e.g., Brooks and Buckmaster 1976; Fama and French 2000) find that changes in earnings tend to reverse from year to year and that large changes reverse faster, particularly if they are negative. Based on these findings, they conclude that earnings tend to *partially* revert to an earlier reported earnings level. However, these studies do not consider the likelihood that firms reporting losses in one period report profits the next period or vice versa. For example, while a large negative earnings *change* in one period which switches the firm's earnings from a profit to a loss tends to be followed by a large positive earnings *change* in the next period, the loss may persist over the two periods because earnings *levels* tend to follow a stationary AR(1) process with a positive autoregressive coefficient (see, e.g., Bathke and Lorek 1984; Brown and Han 2000).

In contrast, we study the probability of a loss/profit conditional on the sign and magnitude of earnings in the previous quarter, and consequently provide insights on the predictability of a loss/profit. Specifically, while the frequency of losses is low (19 percent), its conditional frequency is substantially higher (as high as 82 percent depending on the level of the conditioning variable). Focusing on the 19 percent unconditional frequency, or for that matter on serial correlation coefficients indicating that negative earnings changes reverse quickly, may lead to the (erroneous) conclusion that losses revert quickly to their (positive) mean (i.e., they are transitory). Conversely, considering the 82 percent conditional frequency of a loss obviously leads to an opposite conclusion. Unlike conditional probabilities, serial correlation coefficients may not help in predicting future losses/profits because the negative serial correlation coefficient of earnings *changes* means that a positive earnings change tends to follow a negative earnings change. At the same time, the earnings *levels* tend to follow a stationary AR(1) process with a positive autoregressive coefficient, which means that positive earnings tend to follow positive earnings and negative earnings tend to follow negative earnings (i.e., earnings persist). Consequently, a large negative (positive) earnings change that switches a firm's earnings from a profit (loss) to a loss (profit) in one year may be followed by a large positive (negative) earnings change in the next year, while at the same time the loss (profit) persists over the two periods.[12]

Having demonstrated a substantial difference between conditional and unconditional probabilities of losses/profits, the next section examines whether stock prices behave as if they fully reflect conditional probabilities.

4.2. Tests of market use of conditional probabilities

Table 4 reports the results on buy-and-hold size-adjusted stock returns for the two portfolios formed on the sign of earnings. The results show that losses/profits are bad/good news as earnings announcement returns (returns in period [-2, 0]) are significantly negative for the loss portfolio, -0.95 percent, and significantly positive for the profit portfolio, 0.63 percent. The results also show a substantial drift in the post-announcement periods in the predicted direction. For example, in the period [1, 120] the loss firms exhibit a significantly negative return of -5.50 percent and the profit firms exhibit a significantly positive return of 1.03 percent. A hedge portfolio that takes a short position in the loss portfolio and a long position in the profit portfolio generates a significantly positive buy-and-hold return of 6.53 percent, which is approximately a 13 percent return on an annualized basis. This result suggests investors misprice loss/profit firms in the direction predicted by Hypothesis H3. To further examine the mispricing of loss/profit

[12] Bernard and Thomas (1990) find positive serial correlation coefficients for seasonally differenced quarterly earnings. Again, correlation among seasonally differenced earnings tells little about the correlation between consecutive earnings realizations.

firms, and to directly test the role of conditional and unconditional probabilities in explaining this mispricing, we turn to the results in Table 5.

Table 5, Panel A, reports the results on buy-and-hold size-adjusted returns for a finer earnings partition of loss (profit) subsample into five loss (profit) quintiles based on the magnitude of the loss/profit. Interestingly, for all five loss quintiles the stock returns are significantly negative for all three return windows, [-2, 0], [1, 60], and [1, 120]. The negative earnings announcement returns imply that losses *per se* are bad news dominating other news that may be released simultaneously. The negative post-announcement returns in periods [1, 60] and [1, 120] are again consistent with our hypothesis that investors underestimate the probability of a loss next quarter because they rely on unconditional rather than conditional probabilities (Hypothesis H3). The finer partition also yields higher post-announcement returns particularly for the loss subsample, which is consistent with hypothesis H4. For example, while the 120-day post-announcement loss portfolio return is -5.50 percent (See Table 4), it is -7.60 percent for the extreme loss portfolio in Panel A of Table 5.

More important, as predicted by Hypothesis H5 a positive relation between the hypothesized proxy of the misperception of the likelihood of a future loss/profit (i.e., the difference between the conditional and unconditional probability) and the valuation error (the post-announcement drift) emerges. Consider, for example, the results for the loss subsample. The 120-day abnormal returns for the five loss quintiles are: -7.60 percent, -6.73 percent, -5.88 percent, -4.52 percent, and -2.75 percent. The differences between conditional and unconditional probabilities demonstrate a similar pattern: 0.6314, 0.5473, 0.4435, 0.3628, and 0.2598. That is, the larger the valuation error (the absolute value of the abnormal return) the larger the misperception about the probability of a future loss (the difference between conditional and unconditional probability).

While the findings in Panel A are consistent with H3, H4, and H5, Panel B reports the results of formal tests of these hypotheses. Consistent with H3, the results show that a hedge portfolio that takes a short position in the extreme loss-quintile portfolio and a long position in the extreme profit-quintile portfolio generates significantly positive buy-and-hold returns of 5.72 percent and 10.87 percent for the periods [1, 60] and [1,120], respectively. Further, the finer partition in Panel A of Table 5 relative to Table 4 results in an increase of the hedge portfolio returns. Specifically, for the periods [1, 60] and [1, 120] the returns increase from 3.46 percent and 6.53 percent, respectively, in Table 4, to 5.72 percent and 10.87 percent, respectively, in Panel B of Table 5. Consistent with H4, the corresponding differences in hedge portfolio returns of 2.26 percent (5.72 percent minus 3.46 percent) in the period [1, 60] and 4.34 percent (10.87 percent minus 6.53 percent) in the period [1, 120] are highly significant. Interestingly, nearly all of the increase in the hedge portfolio returns is attributable to the stock return performance of the loss-quintile portfolio (-5.50 percent in Table 4 vis-à-vis -7.60 percent in Panel A of Table 5). This is again consistent with stock prices reflecting unconditional rather than conditional probabilities, since the results in Panel A indicate that the inter-portfolio variation in the difference between the conditional and unconditional probability for the loss subsample is much more pronounced than that for the profit subsample.

In addition, it is attention-worthy that higher differences between conditional and unconditional probabilities are associated with: (1) higher return (in absolute value) on the High Loss portfolio (-7.60 percent) than on the High Profit portfolio (3.27 percent), and (2) higher return spread between Low Loss and High Loss portfolios (4.85 percent) than the one between

High Profit and Low Profit portfolios (3.62 percent). This evidence is consistent with Hypothesis H5.

Panel B of Table 5 also reports the results from correlation tests between the difference in conditional and unconditional probabilities and post-portfolio-formation returns. The results show that for both loss and profit subsamples the correlations between the two measures are significant in the direction predicted by H5. Specifically, the correlation coefficients for the loss-firm sample are -0.97 and -0.99 for the periods [1, 60] and [1, 120], respectively, and are highly significant for both Pearson Product Moment Correlation and Spearman Rank Correlation. The correlation coefficient for the profit-firm sample is 0.78 for both return-accumulation periods; these coefficients are significant (insignificant) for Spearman (Pearson). These results are consistent with H5 in two ways. First, they show that the loss/profit mispricing is related to differences between conditional and unconditional probabilities of losses/profits, as if stock prices do not fully reflect conditional probabilities in a timely fashion. Second, the weaker correlation for the profit subsample may explain the smaller valuation error for the profit subsample relative to that of the loss subsample.

Figure 1 portrays the yearly buy-and-hold size-adjusted returns of our loss/profit trading strategy for our entire sample period, 1976 – 2005. This strategy concerns taking a long position in the extreme profit-quintile portfolio and a short position in the extreme loss-quintile portfolio for the [1, 120] holding period (portfolios rebalanced quarterly). The picture that emerges from Figure 1 is that the loss/profit strategy is consistently profitable: it yields positive abnormal return in 29 years out of our 30-year sample period. The only down year was 1998, where the hedge portfolio exhibited a relatively small loss of -1.40 percent.[13] In the other 29 sample years,

[13] Year 1998 was somewhat unique in that many economies suffered significant disruptions in the aftermath of the late 1997 unprecedented financial crisis in East Asia.

the hedge portfolio yielded positive abnormal returns ranging from 1.50 percent in 1976 to 23.00 percent in 2000, with a mean (median) statistically significant return of 8.10 percent (7.60 percent). This return translates into an annualized mean (median) return of approximately 17.00 percent (16.00 percent).[14]

Collectively, the results presented in Table 4, Table 5 and Figure 1 clearly indicate a substantial stock mispricing related to the difference between the conditional and unconditional probability of a loss/profit. This finding is consistent with a prediction from behavioral finance theories that due to their limited processing ability investors rely on partial information, i.e., unconditional rather than conditional probabilities, when pricing stocks, and consequently make systematic valuation errors.

A natural question arises at this point: is this loss/profit effect incremental to previously documented accounting-based anomalies? The first anomaly that may come to mind concerns stock mispricing based on E/P multiples studied by Basu (1977, 1983), and Lakonishok et al. (1994). However, the objective of these studies was to test whether stock prices are biased due to inflated investor expectations regarding growth in earnings and dividends (see, e.g., Basu 1977, p. 663; Lakonishok et al. 1994, p. 1547). This objective, which is distinctly different from ours, leads to different research design and findings. In particular, these studies used annual, not quarterly data, and more importantly excluded loss firms from their samples entirely (see, Lakonishok et al. 1994, p. 1546; Basu 1983, p. 133) because E/P multiples and earnings growth of loss firms are hard to interpret.[15] Since they focus on profit firms, their return results are also

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[14] Note that in Table 5 the mean return of the hedge portfolio is higher, 10.87 percent. The discrepancy in the mean return between the 10.87 percent in Table 5 and 8.10 percent in Figure 1 follows because in Table 5 we average the 120-day returns across all sample quarters, whereas in Figure 1 we average these returns across calendar years.

[15] Basu (1977) demonstrated that the inclusion of loss firms in his sample made little difference for his findings, which is opposite to what we find. The reason for the difference in findings is that Basu's carefully selected sample

much different. For example, while we find an annualized size-adjusted return of approximately 23 percent to a hedge portfolio that takes long position in extreme profit firms and short position in extreme loss firms, Lakonishok et al. (1994, p. 1550) report hedge portfolio's size-adjusted return of only 5.4 percent per annum. As may be expected, this 5.4 percent return is very similar to the annualized return of our hedge portfolio that takes a long position in our highest-quintile profit firms and a short position in our lowest-quintile profit firms (see Panel A of Table 5). Clearly, the findings of prior E/P multiples studies have little bearing on our findings.

Other anomalies, however, may be related to our findings. As a first step in identifying these anomalies we examine inter-portfolio variation with respect to six variables--SUEs, accruals, book-to-market ratio, institutional ownership, analyst coverage, and firm size--shown by prior research to be related to stock-price performance in broad samples. Panel C of Table 5 displays the mean and median quintile rankings of each of the six variables for four of our portfolios: High Loss, Low Loss, Low Profit and High Profit. The results show that the book-to-market ratios, which capture the value-glamour effect, institutional ownership and analyst coverage, which proxy for ownership sophistication, and size, a catchall variable for unspecified omitted variables, are all non- monotonically related to the loss/profit effect. Specifically, while the results in Panel A clearly demonstrate that stock returns in post-portfolio formation periods increase monotonically between the High Loss portfolio and the High Profit portfolio, the median quintile ranking of the book-to-market ratios first increases from 1 to 4, between the High Loss portfolio and the Low Profit portfolio, but then decreases to 2 for the High Profit portfolio, leading to an oval-shaped relation between the stock returns and the book-to-market

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of only 753 NYSE industrial firms with December fiscal year end in the period 1957-1971contained a negligible number of loss firms. Our findings indicating that the inclusion of loss firms and the partition of the sample into loss and profit firms have a substantial effect on our findings may thus be viewed as another contribution relative to Basu's (1977) study.

ratios. Likewise, institutional ownership, analyst coverage, and size exhibit little variation across the loss/profit portfolios. These findings are helpful because they increase our confidence that the loss/profit strategy is not simply another manifestation of mispricing related to these four variables.[16]

The results in Panel C of Table 5 also show, however, that the loss/profit strategy is correlated to some extent with the SUE variable and accruals. For example, our High Loss portfolio contains firms with low SUE (median quintile-rank 2) and low accruals (median quintile-rank 1), whereas our High Profit portfolio contains firms with high SUE (median quintile-rank 4) and high accruals (median quintile-rank 3). This creates an identification problem: is our loss/profit effect new or simply another manifestation of the well known post-earnings-announcement drift (SUE) and/or accruals effects? To answer this question, we perform below a battery of supplementary tests that explore the extent to which the loss/profit effect overlaps with previously documented trading strategies.

5. Supplementary Tests

5.1. Loss/profit effect, SUE, and future stock returns

Table 6 displays the results from tests of the relation between the loss/profit effect and the SUE effect. Panel A provides results for five SUE-based portfolios (formed quarterly) for three return windows: [-2, 0], [1, 60], and [1, 120], where day 0 is the earnings announcement day. Focusing on the hedge portfolio results, the return from taking a long position in a portfolio containing firms in the highest SUE quintile and a short position in a portfolio containing firms in the lowest SUE quintile, the three-day earnings-announcement return, period [-2, 0], is 2.92 percent. This finding confirms that SUE indeed captures earnings news. The hedge-portfolio

[16] Firm size is unlikely to be a correlated omitted variable also because we use size-adjusted returns.

stock-return of 4.22 percent and 6.06 percent for the two post-earnings announcement windows, [1, 60] and [1, 120], respectively, confirm prior studies' findings that SUE-based strategy generates substantial abnormal returns. This finding is important because it provides a benchmark to assess the relation between the SUE strategy and the loss/profit strategy. In addition, it demonstrates our ability to replicate prior studies' findings, which suggests there is nothing unique about our sample firms or sample period.

Panel B of Table 6 examines the relation between the loss/profit strategy and the SUE strategy. It displays return results by SUE quintiles for loss firms and profit firms separately. That is, firm-quarters in each SUE quintile reported in Panel A were split into two portfolios: a loss-firm portfolio and a profit-firm portfolio.[17]

Two salient findings emerge from reviewing the results in Panel B. First, the loss/profit effect clearly dominates the SUE effect as evidenced by the negative stock returns exhibited by the loss subsample firms in all five SUE portfolios for both post announcement periods, [1, 60] and [1, 120]. This dominance is also apparent from contrasting the results in Panel A with those for the loss subsample in Panel B. While corresponding SUE quintiles in Panel A and Panel B are similar in terms of SUE, they are markedly different in terms of post-announcement returns. To illustrate this point, consider the fifth-SUE-quintile portfolios in both panels. Clearly, the two portfolios are similar in terms of SUE: the median SUE for the fifth quintile is 4.1450 in Panel A and 4.0644 in Panel B (loss firms). The stock returns of the two portfolios, however, are markedly different for both post-announcement periods, [1, 60] and [1, 120]: they are,

[17] For example, Panel B reports 20,809 firm-quarters in the lowest SUE quintile that report a loss (denoted Low SUE^L) and 45,108 firm-quarters in the lowest SUE quintile that report a profit (denoted Low SUE^P). In total, Panel B reports 65,917 (= 20,809 + 45,108) firm-quarters in the lowest SUE quintile, which is slightly below the 65,937 firm-quarters reported for the lowest SUE quintile in Panel A. The discrepancy of 20 firm-quarters between the two panels follows because observations with zero earnings are included in Panel A but excluded from Panel B.

respectively, 2.18 percent and 3.23 percent in Panel A, vis-à-vis -0.84 percent and -2.92 percent in Panel B (loss firms).

Second, once the SUE strategy is combined with the loss/profit strategy, the stock return performance improved significantly. For example, in the period [1, 120] the results in Panel A demonstrate that the SUE-based hedge portfolio yields a buy-and-hold size adjusted return of 6.06 percent, whereas the results for the loss subsample displayed in Panel B show that the combined strategy yields 9.31 percent.

Comparing our results with those of Narayanamoorthy (2006) highlights new insights produced by our approach. Narayanamoorthy (2006) uses regression analysis to study differential post earnings announcement drift between loss firms and profit firms. His regression results imply (p. 779, Table 5) SUE-based hedge portfolio returns of 6.79 percent for profit firms and 5.07 percent (= 6.79 minus 1.72) for loss firms.[18] He attributes these findings to the lower serial correlation coefficient of SUE for loss firms than profit firms. Using portfolio analysis rather than regression analysis and focusing on the tails of the distributions of losses and profits rather than on the total sample of SUEs, our results displayed in Table 6 offer two new insights. First, losses dominate SUEs, as all SUE quintiles generate negative post-announcement returns for loss firms. Second, for the loss-firm subsample the SUE-based strategy is inefficient as the long portfolio generates negative returns, which reduce overall hedge portfolio returns. Consequently, our findings suggest that the SUE-based strategy can be improved substantially (by more than 50 percent) relative to Narayanamoorthy's (2006), by taking a short position in the subset of lowest SUE quintile firms that report a loss and a long position in the subset of firms in the highest SUE quintile that report a profit.

[18] As Narayanamoorthy (2006, p. 772) notes, given the way he defines the SUE variable, the regression coefficients in his Table 5 may be interpreted as: "the average abnormal return from a zero investment portfolio formed by going long in the top SUE decile and short in the bottom SUE decile."

The results in Table 7 shed additional light on the relation between the loss/profit effect and the SUE effect. It presents 120-day buy-and-hold size-adjusted returns for portfolios formed based on a two-way classification in which observations are sorted independently to five SUE quintiles and five loss/profit quintiles. The top five lines contain the results for the loss-firm subsample, the next five lines for the profit-firm subsample, and the bottom line hedge portfolio returns to the loss/profit strategy after controlling for the SUE effect. For example, the top left corner of the table reports a return of -5.61 percent for a portfolio consisting of firms in the highest loss quintile and lowest SUE quintile, and the corresponding bottom right corner of the table reports a return of 5.98 percent for a portfolio consisting of firms in the highest profit quintile and highest SUE quintile. Taking a long position in the latter and a short position in the former generates a return of 11.59 percent, which is comparable to the return of the hedge portfolio formed based on loss/profit alone (10.87 percent) reported in Table 5. This finding provides evidence that the loss/profit effect is independent of the post-earnings-announcement drift effect. Results displayed in the bottom line of Table 7, the one contains the returns of five hedge portfolios formed based on the loss/profit effect after controlling for the SUE effect, further demonstrate this point. Specifically, the results indicate that the loss/profit strategy yields significantly positive returns of 5.78 percent, 10.20 percent, 8.73 percent 9.14 percent, and 11.62 percent for portfolios consisting of firms with SUE quintiles 1, 2, 3, 4 and 5, respectively. Clearly, the return of the loss/profit strategy remains substantial for all portfolios even after controlling for the SUE effect.

5.2. Loss/profit effect, accruals, and future stock returns

Tables 8 and 9 display the results from tests of the relation between the loss/profit effect and the accruals anomaly. Table 8 provides results for five accruals-based portfolios (formed quarterly) for three return windows: [-2, 0], [18, 77], and [18, 137], where day 0 is the earnings announcement day.[19] Focusing on the hedge portfolio return, the return from taking a long position in a portfolio containing firms in the lowest accruals quintile and a short position in a portfolio containing firms in the highest accruals quintile, the three-day earnings-announcement return, period [-2, 0] is statistically significantly negative but economically small (-0.33 percent). This return (in absolute value) is substantially below the 2.92 percent earnings announcement return of the hedge portfolio formed based on SUE (see Table 6), which is to be expected for two reasons. First, at the earnings announcement date not all firms disclose accruals information, and second SUE captures earnings news better than accruals.

The hedge-portfolio stock return for the two post-portfolio formation periods, [18, 77] and [18, 137], are 1.65 percent and 3.18 percent, respectively, confirming prior studies' finding that the accruals-based strategy generates substantial abnormal return. Still, it is noteworthy that these returns are substantially lower than those of the loss/profit strategy reported in Table 5.

Panel B of Table 8 examines the relation between the loss/profit strategy and the accruals strategy. It displays return results by accruals quintiles for loss firms and profit firms separately. That is, firm-quarters in each accruals quintile reported in Panel A were split into two portfolios: a loss-firm portfolio and a profit-firm portfolio.[20] Notice, first, that the results in Panel B clearly indicate that the loss/profit strategy dominates the accruals strategy. Consider the returns for the

[19] Our portfolio formation date is 18 days after the earnings announcement date to allow investors to receive accruals information. This approach is along the line of Collins and Hribar (2000). While we use somewhat different post-portfolio formation return windows, we obtain comparable results when we replicate our analysis using their return windows of two quarters.

[20] For example, Panel B reports 28,318 firm-quarters in the lowest accruals quintile that report a profit (denoted Low ACC^P) and 19,186 firm-quarters in the lowest accruals quintile that report a loss (denoted Low ACC^L). In total, Panel B report 47,504 (= 28,318 + 19,186) firm-quarters in the lowest accruals quintile, which is slightly below the 47,526 firm-quarters reported for the lowest accruals quintile in Panel A. The discrepancy of 22 firm-quarters between the two panels follows because observations with zero earnings are included in Panel A but excluded from Panel B.

lowest accruals quintile firms in the post-portfolio formation periods, which according to the accruals strategy should be positive. Consistent with this prediction, the profit firms in the lowest accruals quintile exhibit significantly positive returns of 1.72 percent and 3.52 percent in the periods [18, 77] and [18, 137], respectively. However, inconsistent with the prediction of the accruals strategy, loss firms in the lowest accruals quintile exhibit significantly negative, not positive, returns of -1.68 percent and -3.28 percent in the periods [18, 77] and [18, 137], respectively. Thus, for the lowest accruals quintile the accruals anomaly generates future returns in the predicted direction only when its prediction coincides with that of the loss/profit strategy; when the two strategies disagree about the sign of a future return, the loss/profit strategy is more often correct.

Second, when the accruals strategy is combined with the loss/profit strategy, the hedge portfolio returns improve substantially, by up to 340 percent, relative to the performance of the accruals strategy alone. For example, for the period [18, 137] the return for the accruals strategy alone is 3.18 percent, whereas the combined strategy generates 10.96 percent. This return from the combined strategy is nearly identical to the return from the loss/profit strategy alone (10.87 percent, see Table 5), which is yet another indication that the loss/profit strategy dominates the accruals strategy.

The results in Table 9 shed additional light on the relation between the loss/profit effect and the accruals anomaly. It presents 120-day buy-and-hold size-adjusted returns for portfolios formed based on a two-way classification in which observations are sorted independently into five accruals quintiles and five loss/profit quintiles. The top five lines contain the results for the loss-firm subsample and the next five lines for the profit-firm subsample. For example, the top right corner of the table reports a return of -9.08 percent for a portfolio consisting of firms in the highest loss quintile and highest accruals quintile, and the bottom left corner of the table reports a return of 5.39 percent for a portfolio consisting of firms in the highest profit quintile and lowest accruals quintile. Taking a long position in the latter and a short position in the former generates a return of 14.47 percent, which is superior to both the return of the hedge portfolio formed based on loss/profit alone (10.87 percent) reported in Table 5 and the one based on accruals alone (3.18 percent) reported in Panel A of Table 8. In fact, the return from the two-way classification is approximately the sum of returns from the two strategies alone, which provides additional evidence that the loss/profit effect is independent of the accruals anomaly.

The bottom line of Table 9 displays the returns of five hedge portfolios formed based on the loss/profit strategy after controlling for the accruals anomaly. These results indicate that the loss/profit strategy yields 10.94 percent, 12.68 percent, 8.52 percent 11.46 percent, and 9.74 percent for portfolios consisting of firms with accruals quintiles of 1, 2, 3, 4 and 5, respectively. That is, the return to the loss/profit strategy is unchanged after controlling for the accruals effect. Moreover, the five hedge portfolios demonstrate little variation with respect to accruals but substantial variation with respect to loss/profit. For example, the difference between the return of the hedge portfolio in the lowest accruals quintile, 10.94 percent, and the highest accruals quintile, 9.74 percent, is only 1.2 percent. Collectively, the results in Tables 8 and 9 demonstrate that the loss/profit effect is incremental to and significantly more pronounced than the accruals effect.

5.3. Loss/profit effect, book-to-market ratios, and future stock returns

Table 10 and Table 11 display the results from tests of the relation between the loss/profit effect and the book-to-market (value-glamour) effect.[21] Table 10 provides results for five book-to-market-based portfolios (formed quarterly) for three return windows: [-2, 0], [1, 60], and [1, 120], where day 0 is the earnings announcement day. Focusing on the hedge portfolio return, the return from taking a long position in a portfolio containing firms in the lowest book-to-market quintile and a short position in a portfolio containing firms in the highest book-to-market quintile, the three-day earnings-announcement return, period [-2, 0], is statistically significant, 0.29 percent. This return, however, is substantially lower than the 2.92 percent earnings announcement return of the hedge portfolio formed based on SUE (see Table 6), which indicates that the SUE effect on earnings announcement returns is approximately 10 times more pronounced than that of the book-to-market ratio. The hedge-portfolio stock return for the two post-portfolio formation periods, [1, 60] and [1, 120], are 1.31 percent and 3.15 percent, respectively, confirming prior studies' finding that book-to-market-based trading strategy generates abnormal return. Still, these returns are substantially lower than those of the loss/profit strategy reported in Table 5.

Panel B of Table 10 examines the relation between the loss/profit strategy and the book-to-market strategy. It displays return results by book-to-market quintiles for loss firms and profit firms separately. That is, firm-quarters in each book-to-market quintile reported in Panel A were split into two portfolios: a loss-firm portfolio and a profit-firm portfolio.[22] Turning to the post-formation portfolio returns displayed in Panel B, there is little doubt that the loss/profit strategy

[21] Along the lines of prior studies, we replicate our tests in this section using, in addition to book-to-market ratios, three alternative proxies for the value-glamour effect: cash flow from operation-to-price ratios, earnings-to-price ratios, and sales growth. The results, which are not tabulated for parsimony, were qualitatively similar.

[22] For example, Panel B reports 18,799 firm-quarters in the lowest book-to-market quintile that report a quarterly loss (denoted Low BM^L) and 59,732 firm-quarters in the lowest book-to-market quintile that report a quarterly profit (denoted Low BM^P). In total, Panel B report 78,531 (= 18,799 + 59,732) firm-quarters in the lowest book-to-market quintile, which is slightly below the 78,551 firm-quarters reported for the lowest book-to-market quintile in Panel A. The rather negligible discrepancy of 20 firm-quarters between the two panels follows because observations with zero earnings are included in Panel A but excluded from Panel B.

dominates the book-to-market strategy. For example, for all book-to-market quintiles the returns are negative for the loss-firm subsample and positive for the profit-firm subsample. Furthermore, when the book-to-market variable and the loss/profit variable disagree about the sign of a future return, the latter is most often correct. To see that, consider the portfolio returns of the highest book-to-market quintile in the loss-firm subsample, where the book-to-market (loss/profit) strategy predicts a positive (negative) future return, respectively. Inconsistent with the prediction of the book-to-market strategy, the returns of this portfolio for the periods [1, 60] and [1, 120] are significantly negative, -1.81 percent and -2.95 percent, respectively.

The results in Table 11 further corroborate those in Table 10. It presents 120-day buy-and-hold size-adjusted returns for portfolios formed based on a two-way classification in which observations are sorted independently every quarter to five book-to-market quintiles and five loss/profit quintiles. The top five lines contain the results for the loss-firm subsample and the next five lines for the profit-firm subsample. For example, the top left corner of the table reports a return of -9.36 percent for a portfolio consisting of firms in the highest loss quintile and lowest book-to-market quintile (known as "glamour" firms), and the bottom right corner of the table reports a return of 8.52 percent for a portfolio consisting of firms in the highest profit quintile and highest book-to-market quintile (known as "value" firms). Taking a long position in the latter and a short position in the former generates a return of 17.88 percent, which amounts to nearly 35 percent annualized return. This return is superior to both the return of the hedge portfolio formed based on loss/profit alone (10.87 percent) reported in Table 5 and the one based on accruals alone (3.15 percent) reported in Panel A of Table 10. In fact, the return from the two-way classification is approximately 25 percent higher than the sum of the returns from the two strategies alone, which indicates that combining the loss/profit strategy and the book-to-market strategy improves substantially the performance of the hedge portfolio.

The bottom line of Table 11 displays the returns of five hedge portfolios formed based on the loss/profit strategy after controlling for the book-to-market variable. These results indicate that the loss/profit strategy yields 11.09 percent, 10.27 percent, 13.44 percent, 10.88 percent, and 12.47 percent for portfolios consisting of firms in book-to-market quintiles 1, 2, 3, 4 and 5, respectively. That is, the return to the loss/profit strategy is unchanged after controlling for the book-to-market effect. Moreover, the five hedge portfolios demonstrate little variation with respect to book-to-market but substantial variation with respect to loss/profit. For example, the difference between the return of the hedge portfolio in the lowest book-to-market quintile, 11.09 percent, and the highest book-to-market quintile, 12.47 percent, is relatively small (1.38 percent). Collectively, the results in Tables 10 and 11 demonstrate that the loss/profit effect is incremental to and significantly more pronounced than the book-to-market effect.[23]

5.4. Loss/profit effect, SUE, accruals, book-to-market ratios, and future stock returns

So far we examine the ability of the loss/profit effect to predict future returns after controlling for one possible alternative explanation at a time. In this section, we assess the ability of the loss/profit effect to predict future returns after controlling for all three alternative explanations simultaneously by using multivariate regression analysis as specified by Equation (1). Note that since Equation (1) includes an intercept, a_0, the least square values of a_1, a_2, a_3, and a_4 are abnormal returns on zero-investment (hedge) portfolios, that is, portfolios where the

[23] We also consider the relation between the loss/profit effect and institutional ownership, analyst coverage, and firm size by replicating the tests reported in Tables 10 and 11 substituting the book-to-market variable with each of these three variables. The results, which are not tabulated for parsimony, clearly indicate that the loss/profit effect remains unchanged even after controlling for these variables.

sum of the weights assigned to individual securities is zero.[24]

Table 12 displays coefficient estimates for Equation (1), as well as for three models nested within this equation. The results in Panel A are based on pooled data and in Panel B on the Fama-MacBeth (1973) procedure. Clearly, the findings in Table 12 are robust to alternative estimation methods and model specifications, as the results within each panel and across the two panels are similar. Consider the results in Panel B for the full model. As predicted, a_1, a_2, and a_3 are significantly positive, and a_4 is significantly negative. Overall, the results in Table 12 demonstrate that the loss/profit effect is incremental to the three previously documented earnings-related anomalies even when they are controlled simultaneously. This follows because the estimates on the loss/profit variable are, as predicted, significantly positive for all specifications in both panels, ranging from 0.0581 to 0.0832.[25]

6. Conclusion

Over the last two decades, a large volume of empirical work has documented a variety of ways in which stock returns can be predicted based on publicly available information – in particular based on earnings information. In this study, we examine how investors price implications of current losses/profits for future losses/profits. The intuition underlying this approach is that if investors rely on overly simplified models to assess a firm's future prospects, as behavioral finance theories suggest, they may assess the probability of a loss/profit based on their unconditional rather than conditional probability of a loss/profit. Since the unconditional

[24] See Fama (1976, pp. 323-331) or Bernard and Thomas (1990, pp. 325-326) for more details on the use of least squares coefficients as portfolio returns.

[25] For the regression analysis, we sort the earnings variable into quintiles, without first separating loss firms from profit firms, for comparability across explanatory variables. Nevertheless, the lowest earnings quintile is dominated by loss firms (median earnings scaled by lagged total assets, -0.0198), and the highest earnings quintile is dominated by high profit firms (median earnings scaled by lagged total assets, 0.0361).

probability of a loss/profit is lower than the corresponding conditional probability, this type of investor behavior will result in systematic underestimation of the probability of a loss/profit. Moreover, once the magnitude of the loss/profit in the previous quarter is considered, differences between unconditional and conditional probabilities become more pronounced. Consequently, a negative (positive) post loss (profit) announcement drift in stock returns will be observed, and more so for extreme prior earnings realizations.

Employing a broad sample spanning 30 years, from 1976 through 2005, we find evidence in support of the above predictions. Briefly, over the 120-trading-day period following the earnings announcement, firms in an extreme loss quintile portfolio exhibit a negative drift of nearly 8 percent, whereas firms in an extreme profit quintile portfolio exhibit a positive drift of over 3 percent. A hedge portfolio that takes a long position in the extreme profit firms and a short position in the extreme loss firms generates approximately 11 percent abnormal return, which translates into an annualized return of approximately 23 percent. Further, the differences between conditional and unconditional probabilities, our measure of the misperception of the probability of a future loss/profit, are correlated with the levels of loss/profit mispricing. In other words, the higher is the difference between the conditional and unconditional probabilities, the larger is the mispricing. Finally, using both univariate and multivariate tests we show that the mispricing associated with our loss/profit strategy is distinct from, and incremental to, three previously documented accounting-based anomalies: the post-earnings-announcement drift, the accruals anomaly, and the value-glamour anomaly.

The primary contribution of our study is that it uncovers a new anomaly related to the pricing of earnings. While previous studies have focused on the pricing of earnings surprises and earnings components, we show that the sign of earnings themselves and their magnitudes are mispriced. This finding is statistically significant and economically important. Further, our study shows that this mispricing is related to differences between conditional and unconditional probabilities of losses/profits, as if stock prices do not fully reflect conditional probabilities in a timely fashion. Finally, we demonstrate that considering conditional rather than unconditional probability of losses/profits, and in particular focusing on the tails of the earnings distribution (i.e., extreme losses/profits), leads to new insights about the likelihood of losses/profits. Our findings thus have important implications to our understanding of the time-series properties of earnings and on how investors value loss/profit firms.

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Figure 1
Buy-and-Hold Size-Adjusted Stock Returns by Year for the Loss/Profit Strategy

Min	-0.014
Max	0.230
Median	0.076
Mean	0.081
t-stat	*(8.44)*

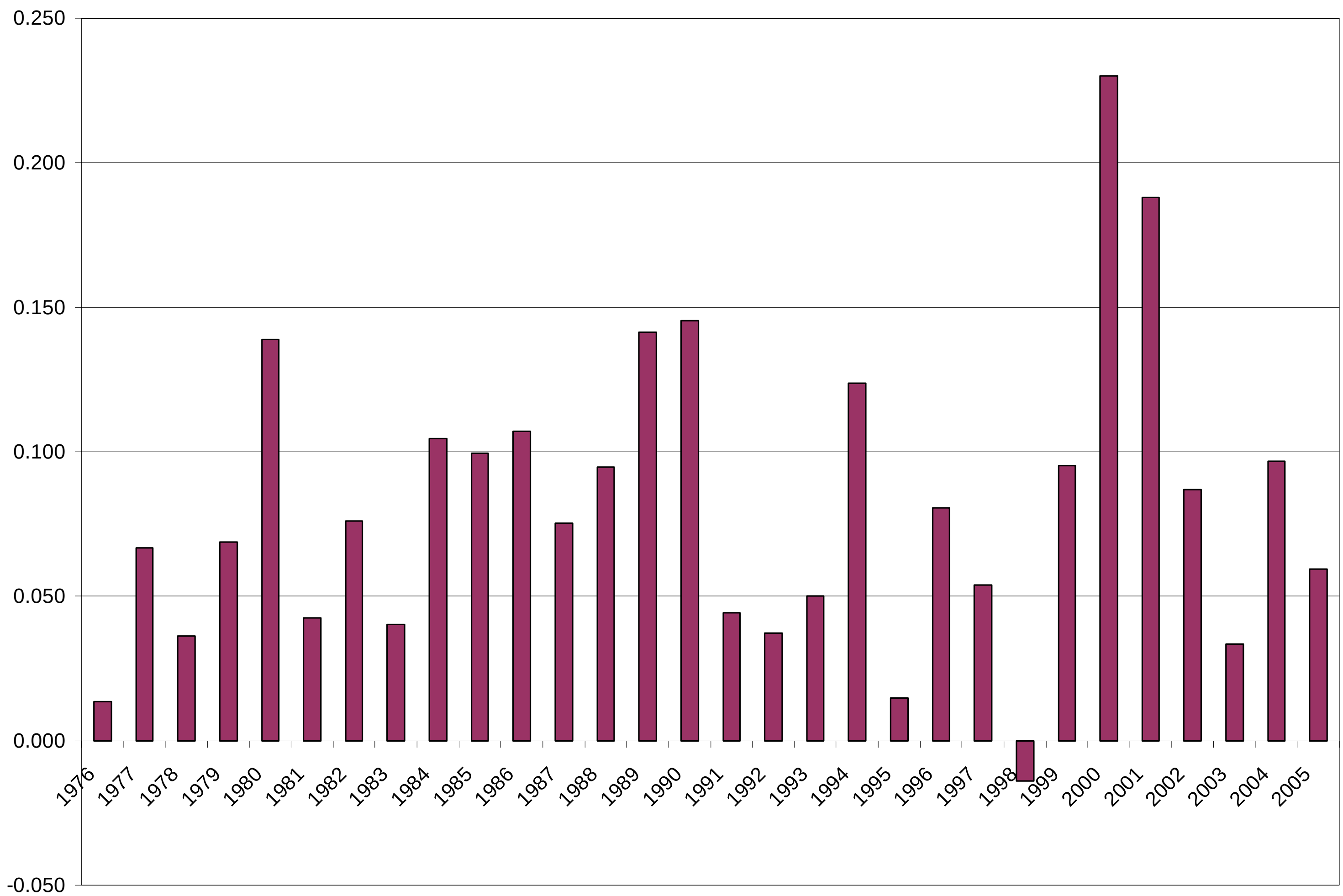

Figure notes:
This figure presents buy-and-hold size-adjusted returns by year for the window [1, 120], where day 0 is the quarterly earnings announcement date. The loss/profit strategy consists of a long position in the largest earnings quintile of profit firms (High Profit) and a short position in the smallest earnings quintile of loss firms (High Loss). All portfolios are formed every fiscal quarter.

Table 1
Sample Selection

	Number of firm-quarters	Number of distinct firms
Primary Tests		
All firm-quarter observations with required quarterly data on Compustat during sample period 1976-2005.[a]	630,997	20,087
With returns data available on CRSP.	512,193	16,449
With stock price five days prior to the quarterly earnings announcement date above the stock price threshold.[b]	434,407	15,311
Primary tests sample size	**434,407**	**15,311**
First Set of Supplementary Tests: Loss/Profit Effect vs. PEAD Effect		
Primary tests sample with additional data constraint to compute SUE, i.e. quarterly earnings data on Compustat for at least 12 consecutive quarters.[c]	329,935	12,242
Second Set of Supplementary Tests: Loss/Profit Effect vs. Accruals Effect		
Primary tests sample with additional data constraint to compute accruals in quarter q.[d]	237,796	10,436
Third Set of Supplementary Tests: Loss/Profit Effect vs. Value/Glamour Effect		
Primary tests sample with additional data constraint to compute book-to-market value of equity ratio in quarter $q-1$.[e]	393,017	14,314

Table notes:

[a] Required data on Compustat is earnings before extraordinary items and discontinued operations (Compustat Quarterly data8) in quarter q and total assets (Compustat Quarterly data44) in quarter $q-1$.

[b] The stock price threshold is set at $5 in year 2005 and decreased 8% annually for earlier years to account for stock market appreciation.

[c] SUE is the standardized unexpected earnings in quarter q (generated using a seasonal random walk with drift model). Required data on Compustat to compute SUE is earnings per share excluding extraordinary items (Compustat Quarterly data9).

[d] Required data on Compustat to compute accruals is income before extraordinary items (Compustat Quarterly data76) in a quarter q, net cash flow from operating activities (Compustat Quarterly data108), extraordinary income and discontinued operations (Compustat Quarterly data78) in quarter q and total assets (Compustat Quarterly data44) in quarter $q-1$. Due to the unavailability of cash flow data prior to 1988, this sample spans 1988-2005.

[e] Required data on Compustat to compute the ratio of book-to-market value of equity is: Compustat Quarterly data59 / (data61 * data14).

Table 2
2x2 Contingency Table of Loss / Profit

$H1_{A1}$ (Alternate Hypothesis): $P(Loss_q) < P(Loss_q \mid Loss_{q-1})$

$H1_{A2}$ (Alternate Hypothesis): $P(Profit_q) < P(Profit_q \mid Profit_{q-1})$

	$Loss_q$	$Profit_q$	Row Total
$Loss_{q-1}$	48,143	26,874	**75,017**
	(0.64)	*(0.36)*	***(1.00)***
$Profit_{q-1}$	28,779	302,029	**330,808**
	(0.09)	*(0.91)*	***(1.00)***
Column Total	**76,922**	**328,903**	**405,825**
	(0.19)	***(0.81)***	***(1.00)***
	Z = *350.02*		

Table notes:
The z-statistic is the signed square root of the chi-square statistic used for one-sided tests. The distribution of this z-statistic is approximately normal (see Conover 1980, pp. 145-146). Critical values for 0.05 and 0.01 significance levels are, respectively, 1.64 and 2.32. The numbers represent frequencies and those in parentheses represent probabilities.

Table 3
5x2 Contingency Tables of Loss / Profit

Panel A: Loss Subsample

*$H2_{A1}$ (Alternate Hypothesis): P(Row i, Column j) ≠ P(Row i)*P(Column j) $\forall i, j$*

		$Loss_q$	$Profit_q$	Row Total
$Loss_{q-1}$	High Loss	12,280	2,678	**14,958**
		(0.82)	*(0.18)*	***(1.00)***
	2	11,205	4,001	**15,206**
		(0.74)	*(0.26)*	***(1.00)***
	3	9,628	5,581	**15,209**
		(0.63)	*(0.37)*	***(1.00)***
	4	8,299	6,727	**15,026**
		(0.55)	*(0.45)*	***(1.00)***
	Low Loss	6,731	8,247	**14,978**
		(0.45)	*(0.55)*	***(1.00)***
	Column Total	**48,143**	**27,234**	**75,377**
		(0.64)	***(0.36)***	***(1.00)***
	$\chi(4)^2 = 5{,}602.68$			

Panel B: Profit Subsample

*$H2_{A2}$ (Alternate Hypothesis): P(Row i, Column j) ≠ P(Row i)*P(Column j) $\forall i, j$*

		$Loss_q$	$Profit_q$	Row Total
$Profit_{q-1}$	Low Profit	9,739	56,371	**66,110**
		(0.15)	*(0.85)*	***(1.00)***
	2	6,903	59,281	**66,184**
		(0.10)	*(0.90)*	***(1.00)***
	3	4,753	61,436	**66,189**
		(0.07)	*(0.93)*	***(1.00)***
	4	3,513	62,671	**66,184**
		(0.05)	*(0.95)*	***(1.00)***
	High Profit	3,871	62,270	**66,141**
		(0.06)	*(0.94)*	***(1.00)***
	Column Total	**28,779**	**302,029**	**330,808**
		(0.09)	***(0.91)***	***(1.00)***
	$\chi(4)^2 = 5{,}103.50$			

Table notes:
$\chi(4)^2$ is the chi-square statistic with four degrees of freedom (see Conover 1980, pp. 158-159). Critical values for 0.05 and 0.01 significance levels are, respectively, 9.48 and 13.28. The numbers represent frequencies and those in parentheses represent probabilities.

Table 4
Buy-and-Hold Size-Adjusted Stock Returns for Portfolios Formed on Loss/Profit

Loss/Profit Firms	N	Difference in Cond. and Uncond. Prob.	Buy-and-Hold Size-Adjusted Returns		
			[-2, 0]	[1, 60]	[1, 120]
Loss Firms	86,751	0.45	-0.0095	-0.0300	-0.0550
			(-32.26)	*(-28.46)*	*(-34.89)*
Profit Firms	347,512	0.10	0.0063	0.0046	0.0103
			(59.03)	*(13.67)*	*(19.64)*
Profit – Loss			**0.0158**	**0.0346**	**0.0653**
t-statistics			*(66.85)*	*(28.21)*	*(36.56)*
Alternate t-statistics (Fama-MacBeth)			*(33.96)*	*(4.94)*	*(5.58)*

Table notes:
This table presents buy-and-hold size-adjusted returns for the following windows: [-2, 0], [1, 60] and [1, 120], where 0 is the earnings announcement date of quarter *q*. t-statistics are in parenthesis. Alternate t-statistics are calculated using the Fama-MacBeth (1973) procedure on the returns to the strategy every quarter. The full sample excluding zero profit firms (434,263 firm-quarter observations) is classified into Loss Firms and Profit Firms based on Earnings. Earnings are before extraordinary items and discontinued operations (Compustat Quarterly data8) in quarter *q* scaled by total assets (Compustat Quarterly data44) in quarter *q-1*.

Table 5
Portfolios Formed on Earnings for Loss/Profit Firms Subsamples

Panel A: Buy-and-Hold Size-Adjusted Stock Returns for Portfolios Formed on Earnings for Loss/Profit Firms Subsamples

Earnings Quintile	N	Difference in Cond. and Uncond. Prob.	Buy-and-Hold Size-Adjusted Returns		
			[-2, 0]	[1, 60]	[1, 120]
High Loss	17,298	0.6314	-0.0131	-0.0372	-0.0760
			(-17.62)	*(-12.79)*	*(-18.48)*
2	17,375	0.5473	-0.0100	-0.0375	-0.0673
			(-14.39)	*(-14.32)*	*(-16.69)*
3	17,371	0.4435	-0.0108	-0.031	-0.0588
			(-16.82)	*(-13.69)*	*(-16.93)*
4	17,375	0.3628	-0.0090	-0.0262	-0.0452
			(-15.42)	*(-12.77)*	*(-14.86)*
Low Loss	17,332	0.2598	-0.0047	-0.0179	-0.0275
			(-7.55)	*(-10.24)*	*(-10.04)*
Low Profit	69,449	0.0422	-0.0003	-0.0049	-0.0035
			(-1.59)	*(-7.08)*	*(-3.30)*
2	69,531	0.0852	0.0019	-0.002	0.0008
			(8.78)	*(-2.91)*	*(0.77)*
3	69,525	0.1177	0.0060	0.0024	0.0063
			(26.11)	*(3.41)*	*(5.70)*
4	69,531	0.1365	0.0089	0.0076	0.0153
			(36.35)	*(10.13)*	*(13.02)*
High Profit	69,476	0.1310	0.0151	0.0199	0.0327
			(52.81)	*(22.00)*	*(22.98)*

Panel B: Tests of Hedge Portfolio Returns and Correlations

	[-2, 0]	[1, 60]	[1, 120]
High Profit – High Loss	**0.0282**	**0.0572**	**0.1087**
t-statistics	*(53.90)*	*(25.17)*	*(29.42)*
Alternate t-statistics (Fama-MacBeth)	*(37.93)*	*(10.95)*	*(12.23)*
Difference between (High Profit – High Loss) and (Profit – Loss)	**0.0124**	**0.0226**	**0.0434**
t-statistics	*(29.60)*	*(15.69)*	*(16.57)*
Alternate t-statistics (Fama-MacBeth)	*(18.09)*	*(4.82)*	*(4.69)*
Correlation Coefficients Between Differences in Conditional and Unconditional Probability and Portfolio Returns			
Loss Subsample	**-0.91**	**-0.97**	**-0.99**
p-value (Pearson)	*(0.03)*	*(0.01)*	*(<0.01)*
p-value (Spearman)	*(0.04)*	*(0.04)*	*(<0.01)*
Profit Subsample	**0.85**	**0.78**	**0.78**
p-value (Pearson)	*(0.07)*	*(0.12)*	*(0.12)*
p-value (Spearman)	*(0.04)*	*(0.04)*	*(0.04)*

Table 5 (cont'd)

Panel C: Portfolios' Characteristics

Earnings Quintile	SUE Quintile		Accruals Quintile		BM Quintile		Inst. Ownership Quintile		Analyst Coverage Quintile		Size Quintile	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
High Loss	2.27	2	2.11	1	2.19	1	2.15	2	2.38	2	2.23	2
Low Loss	2.64	2	2.98	3	3.66	4	2.79	3	2.79	3	2.70	3
Low Profit	2.94	3	3.09	3	3.81	4	2.79	3	2.75	3	2.80	3
High Profit	3.35	4	3.24	3	1.89	2	3.16	3	3.19	3	3.27	3

Table notes:
Panel A presents buy-and-hold size-adjusted returns for the following windows: [-2, 0], [1, 60] and [1, 120], where 0 is the earnings announcement date of quarter *q*. t-statistics are in parenthesis. Earnings are earnings before extraordinary items and discontinued operations (Compustat Quarterly data8) in quarter *q* scaled by total assets in quarter *q*-1 (Compustat Quarterly data44). The full sample, excluding zero profit firms, is partitioned into loss and profit firms (86,751 and 347,512 firm-quarter observations respectively). Loss (profit) firms are then re-ranked into five quintiles from smallest earnings, High Loss (Low Profit), to largest earnings, Low Loss (High Profit). The cut-off points are determined every quarter based on the distribution of earnings in the corresponding quarter. Panel B presents the difference in the buy-and-hold size-adjusted returns between the two extreme portfolios (High Profit and High Loss) as well as the difference in the hedge portfolios (High Profit – High Loss) and (Profit – Loss) from Table 4; t-statistics are in parenthesis; alternate t-statistics are calculated using the Fama-MacBeth (1973) procedure on the returns to the strategy every quarter. Panel B also presents the correlations between the differences in conditional and unconditional probability and portfolio returns; p-values are in parenthesis. Panel C presents the mean and median quintiles of SUE, accruals, BM, institutional ownership, analyst coverage, and size. SUE is the standardized unexpected earnings in quarter *q* (generated using a seasonal random walk with drift model), based on diluted earnings per share excluding extraordinary items (Compustat Quarterly data9). Accruals are defined as (Compustat Quarterly data76 – (data108 – data78)) in quarter *q* scaled by average assets (Compustat Quarterly data44) in quarter *q*. BM is the ratio of book-to-market value of equity (Compustat Quarterly data59 / (data61 * data14)) at the end of quarter *q*-1. Institutional ownership is the percentage of shares outstanding held by institutional investors, based on the latest holdings reported between the earnings announcement date of quarter *q-1* and the earnings announcement date of quarter *q*, as reported in the SEC 13f filings available in the CDA Spectrum database. Analyst coverage is the number of analyst forecasts in the latest consensus quarterly earnings forecast for quarter *q* prior to the earnings announcement of quarter *q*, if the consensus occurs after the earnings announcement date of quarter *q-1*, as reported in I/B/E/S. Size is the market value of equity (Compustat Quarterly (data61 * data14)) at the end of quarter *q*. The cut-off points for SUE, accruals, BM, institutional ownership, analyst coverage, and size are determined every quarter based on the distribution of SUE, accruals, BM, institutional ownership, analyst coverage, and size respectively in the corresponding quarter.

Table 6
Buy-and-Hold Size-Adjusted Stock Returns for Portfolios Formed on SUE

SUE Quintile	N	Median SUE	Buy-and-Hold Size-Adjusted Returns [-2, 0]	[1, 60]	[1, 120]
Panel A: Full Sample					
Low SUE	65,937	-4.9762	-0.0109	-0.0204	-0.0283
			(-42.12)	*(-24.59)*	*(-22.73)*
2	66,013	-1.4577	-0.0032	-0.0098	-0.0115
			(-13.13)	*(-12.03)*	*(-9.04)*
3	66,010	0.0201	0.0030	-0.0010	0.0004
			(11.66)	*(-1.19)*	*(0.32)*
4	66,013	1.4184	0.0086	0.0077	0.0159
			(35.13)	*(9.31)*	*(12.65)*
High SUE	65,962	4.1450	0.0183	0.0218	0.0323
			(66.37)	*(24.87)*	*(23.55)*
High SUE – Low SUE			**0.0292**	**0.0422**	**0.0606**
			(77.10)	*(34.96)*	*(32.71)*
Panel B: Subsamples Loss/Profit Firms					
Low SUE^L	20,809	-6.2121	-0.0168	-0.0320	-0.0530
			(-29.40)	*(-16.57)*	*(-18.45)*
2	13,525	-1.5312	-0.0107	-0.0335	-0.053
			(-15.35)	*(-13.98)*	*(-14.51)*
3	10,494	-0.0404	-0.0056	-0.0231	-0.0425
			(-6.16)	*(-7.74)*	*(-9.41)*
4	8,068	1.3017	-0.0036	-0.0171	-0.0272
			(-3.98)	*(-4.73)*	*(-5.35)*
High SUE^L	7,426	4.0644	-0.0003	-0.0084	-0.0292
			(-0.35)	*(-2.28)*	*(-5.31)*
Low SUE^P	45,108	-4.6332	-0.0082	-0.0151	-0.0170
			(-30.27)	*(-18.31)*	*(-13.63)*
2	52,466	-1.4387	-0.0013	-0.0037	-0.0008
			(-5.13)	*(-4.54)*	*(-0.65)*
3	55,492	0.0327	0.0046	0.0032	0.0085
			(18.55)	*(3.87)*	*(6.76)*
4	57,931	1.4341	0.0103	0.0112	0.0219
			(41.43)	*(13.98)*	*(17.65)*
High SUE^P	58,525	4.1574	0.0207	0.0256	0.0401
			(72.78)	*(29.48)*	*(29.13)*
High SUE^P – Low SUE^L			**0.0375**	**0.0576**	**0.0931**
			(76.27)	*(33.40)*	*(34.38)*

Table notes:
This table presents buy-and-hold size-adjusted returns for the following windows: [-2, 0], [1, 60] and [1, 120], where 0 is the earnings announcement date of quarter q. t-statistics are in parenthesis. SUE is the standardized unexpected earnings in quarter q (generated using a seasonal random walk with drift model), based on diluted earnings per share excluding extraordinary items (Compustat Quarterly data9). In Panel A, the full sample (329,935 firm-quarter observations) is classified into five quintiles ranked from smallest SUE (Low SUE) to largest SUE (High SUE). The cut-off points are determined every quarter based on the distribution of SUE in the corresponding quarter. In Panel B, the full sample, excluding zero profit firms, is partitioned into loss and profit firms (60,322 and 269,522 firm-quarter observations

respectively). The SUE quintiles are the same as in Panel A and are denoted Low SUE^L to High SUE^L (Low SUE^P to High SUE^P) for loss (profit) firms.

Table 7
Buy-and-Hold Size-Adjusted Stock Returns for Portfolios Formed on Earnings and SUE for the Period [1, 120]

		SUE Quintile						
		Low SUE	2	3	4	High SUE	High SUE – Low SUE	
Negative Earnings Quintile	High Loss	-0.0561	-0.0812	-0.0606	-0.0572	-0.0564	**-0.0003**	*(5.08)*
	2	-0.0581	-0.0543	-0.0501	-0.0364	-0.0415	**0.0166**	*(5.73)*
	3	-0.0555	-0.0553	-0.0479	-0.0308	-0.0345	**0.0210**	*(5.91)*
	4	-0.0509	-0.0495	-0.0468	-0.0248	-0.0177	**0.0332**	*(5.67)*
	Low Loss	-0.0419	-0.0334	-0.0182	-0.0018	-0.0054	**0.0365**	*(5.09)*
Positive Earnings Quintile	Low Profit	-0.0279	-0.0169	-0.0053	0.0093	0.0215	**0.0494**	*(12.68)*
	2	-0.0245	-0.0081	0.0028	0.0175	0.0243	**0.0488**	*(12.79)*
	3	-0.0220	-0.0008	0.0093	0.0179	0.0327	**0.0547**	*(13.67)*
	4	-0.0086	0.0057	0.0123	0.0284	0.0469	**0.0555**	*(15.17)*
	High Profit	0.0017	0.0208	0.0267	0.0342	0.0598	**0.0581**	*(16.36)*
High Profit – High Loss		**0.0578**	**0.1020**	**0.0873**	**0.0914**	**0.1162**		
		(6.47)	*(8.51)*	*(8.20)*	*(11.30)*	*(18.87)*		

High Profit & High SUE^P – High Loss & Low SUE^L = 0.1159
(20.12)

Table notes:
This table presents buy-and-hold size-adjusted returns for the window [1, 120], where day 0 is the earnings announcement date of quarter *q*. Earnings are earnings before extraordinary items and discontinued operations (Compustat Quarterly data8) in quarter *q* scaled by total assets in quarter *q-1* (Compustat Quarterly data44). SUE is the standardized unexpected earnings in quarter *q* (generated using a seasonal random walk with drift model), based on diluted earnings per share excluding extraordinary items (Compustat Quarterly data9). The full sample (329,935 firm-quarter observations) is partitioned into loss and profit firms. Loss (profit) firms are then classified into five quintiles from smallest earnings, High Loss (Low Profit), to largest earnings, Low Loss (High Profit). Independently, the full sample is also classified into five quintiles from smallest SUE (Low SUE) to largest SUE (High SUE) and then partitioned into loss and profit firms. The cut-off points for SUE and earnings are determined every quarter based on the distribution of SUE and earnings respectively in the corresponding quarter.

Table 8
Buy-and-Hold Size-Adjusted Stock Returns for Portfolios Formed on Accruals

Accruals Quintile	N	Median Accruals	Buy-and-Hold Size-Adjusted Returns [-2, 0]	[18, 77]	[18, 137]
Panel A: Full Sample					
Low ACC	47,526	-0.0604	0.0028	0.0035	0.0077
			(7.07)	*(2.54)*	*(3.70)*
2	47,573	-0.0239	0.0037	0.0035	0.0052
			(11.54)	*(3.10)*	*(3.03)*
3	47,580	-0.0094	0.0033	-0.0014	-0.0027
			(10.75)	*(-1.38)*	*(-1.70)*
4	47,573	0.0042	0.0043	-0.0071	-0.0110
			(13.40)	*(-6.55)*	*(-6.51)*
High ACC	47,544	0.0408	0.0062	-0.0130	-0.0240
			(15.93)	*(-10.14)*	*(-12.23)*
Low ACC – High ACC			**-0.0033**	**0.0165**	**0.0318**
			(-5.94)	*(8.76)*	*(11.07)*
Panel B: Subsamples Loss/Profit Firms					
Low ACC^P	28,318	-0.0537	0.0112	0.0172	0.0352
			(25.11)	*(12.20)*	*(15.83)*
2	35,917	-0.0235	0.0070	0.0101	0.0200
			(20.57)	*(9.14)*	*(11.59)*
3	38,486	-0.0092	0.0058	0.0048	0.0095
			(18.27)	*(4.82)*	*(6.00)*
4	39,071	0.0042	0.0062	-0.0021	-0.0005
			(18.49)	*(-1.97)*	*(-0.32)*
High ACC^P	38,402	0.0406	0.0093	-0.0056	-0.0121
			(22.17)	*(-4.21)*	*(-5.99)*
Low ACC^L	19,186	-0.0727	-0.0095	-0.0168	-0.0328
			(-12.81)	*(-6.21)*	*(-8.22)*
2	11,633	-0.0256	-0.0065	-0.0168	-0.0406
			(-8.24)	*(-5.40)*	*(-9.09)*
3	9,080	-0.0104	-0.0072	-0.0279	-0.0542
			(-8.35)	*(-8.12)*	*(-11.18)*
4	8,495	0.0045	-0.0045	-0.0300	-0.0591
			(-4.82)	*(-8.66)*	*(-10.93)*
High ACC^L	9,120	0.0419	-0.0070	-0.0446	-0.0744
			(-7.35)	*(-12.22)*	*(-13.25)*
Low ACC^P – High ACC^L			**0.0182**	**0.0618**	**0.1096**
			(24.83)	*(17.18)*	*(20.62)*

Table notes:
This table presents buy-and-hold size-adjusted returns for the following windows: [-2, 0], [1, 60] and [1, 120], where 0 is the earnings announcement date of quarter *q*. t-statistics are in parenthesis. ACC is the accruals (Compustat Quarterly data76 – (data108 – data78)) in quarter *q* scaled by average assets (Compustat Quarterly data44) in quarter *q*. In Panel A, the full sample (237,796 firm-quarter observations) is classified into five quintiles ranked from smallest accruals (Low ACC) to largest accruals (High ACC). The cut-off points are determined every quarter based on the distribution of accruals in the corresponding quarter. In Panel B, the full sample, excluding zero profit firms, is partitioned into loss and profit firms (57,514 and 180,194 firm-quarter observations respectively). The accruals quintiles are the same as in Panel A and are denoted Low ACC^L to High ACC^L (Low ACC^P to High ACC^P) for loss (profit) firms.

Table 9
Buy-and-Hold Size-Adjusted Stock Returns for Portfolios Formed on Earnings and Accruals for the Period [18, 137]

		Accruals Quintile						
		Low ACC	2	3	4	High ACC	Low ACC – High ACC	
Negative Earnings Quintile	High Loss	-0.0555	-0.0744	-0.0526	-0.0876	-0.0908	**0.0353**	*(4.14)*
	2	-0.0392	-0.0619	-0.0709	-0.0528	-0.0837	**0.0445**	*(0.72)*
	3	-0.0098	-0.0533	-0.0760	-0.0776	-0.0770	**0.0672**	*(2.87)*
	4	-0.0058	-0.0243	-0.0541	-0.0593	-0.0728	**0.0670**	*(4.03)*
	Low Loss	-0.0112	-0.0054	-0.0284	-0.0341	-0.0470	**0.0358**	*(2.71)*
Positive Earnings Quintile	Low Profit	-0.0102	-0.0100	-0.0017	-0.0118	-0.0378	**0.0276**	*(3.14)*
	2	0.0157	0.0089	0.0017	-0.0131	-0.0301	**0.0458**	*(6.62)*
	3	0.0323	0.0131	0.0050	-0.0088	-0.0244	**0.0567**	*(8.62)*
	4	0.0461	0.0254	0.0135	0.0020	-0.0094	**0.0555**	*(8.36)*
	High Profit	0.0539	0.0524	0.0326	0.0270	0.0066	**0.0473**	*(6.06)*
High Profit – High Loss		**0.1094**	**0.1268**	**0.0852**	**0.1146**	**0.0974**		
		(13.63)	*(11.90)*	*(7.31)*	*(7.66)*	*(4.23)*		

High Profit & Low ACC^{P} – High Loss & High ACC^{L} = 0.1447
(14.25)

Table notes:
This table presents buy-and-hold size-adjusted returns for the window [18, 137], where day 0 is the earnings announcement date of quarter *q*. Earnings are earnings before extraordinary items and discontinued operations (Compustat Quarterly data8) in quarter *q* scaled by total assets (Compustat Quarterly data44) in quarter *q-1*. ACC is the accruals (Compustat Quarterly data76 – (data108 – data78)) in quarter *q* by average assets (Compustat Quarterly data44) in quarter *q*. The full sample (237,796 firm-quarter observations) is partitioned into loss and profit firms. Loss (profit) firms are then classified into five quintiles from smallest earnings, High Loss (Low Profit), to largest earnings, Low Loss (High Profit). Independently, the full sample is also classified into five quintiles from smallest accruals (Low ACC) to largest accruals (High ACC) and then partitioned into loss and profit firms. The cut-off points for accruals and earnings are determined every quarter based on the distribution of accruals and earnings respectively in the corresponding quarter.

Table 10
Buy-and-Hold Size-Adjusted Stock Returns for Portfolios Formed on Book-to-Market

BM Quintile	N	Median BM	Buy-and-Hold Size-Adjusted Returns [-2, 0]	[1, 60]	[1, 120]
Panel A: Full Sample					
Low BM	78,551	0.1844	0.0018	-0.0094	-0.0197
			(6.54)	*(-10.05)*	*(-13.85)*
2	78,630	0.3748	0.0022	-0.0043	-0.0085
			(9.18)	*(-5.36)*	*(-6.79)*
3	78,629	0.5579	0.0028	-0.0013	0.0010
			(12.66)	*(-1.83)*	*(0.89)*
4	78,629	0.7756	0.0038	0.0028	0.0091
			(17.94)	*(4.13)*	*(8.80)*
High BM	78,578	1.2254	0.0047	0.0037	0.0118
			(19.23)	*(4.93)*	*(10.33)*
High BM – Low BM			**0.0029**	**0.0131**	**0.0315**
			(7.93)	*(10.93)*	*(17.26)*
Panel B: Subsamples Loss/Profit Firms					
Low BM^L	18,799	0.1281	-0.0071	-0.0430	-0.0834
			(-10.37)	*(-16.97)*	*(-22.21)*
2	12,085	0.3468	-0.0084	-0.0377	-0.0651
			(-10.39)	*(-12.49)*	*(-13.86)*
3	10,648	0.545	-0.0114	-0.0294	-0.0521
			(-14.77)	*(-10.63)*	*(-12.59)*
4	12,099	0.7753	-0.0111	-0.0197	-0.0340
			(-16.59)	*(-8.58)*	*(-9.90)*
High BM^L	20,554	1.3434	-0.0126	-0.0181	-0.0295
			(-24.46)	*(-10.27)*	*(-11.40)*
Low BM^P	59,732	0.2131	0.0046	0.0012	0.0002
			(16.05)	*(1.27)*	*(0.16)*
2	66,533	0.3958	0.0041	0.0017	0.0019
			(17.15)	*(2.24)*	*(1.56)*
3	67,957	0.5704	0.0050	0.0031	0.0093
			(22.67)	*(4.46)*	*(8.60)*
4	66,509	0.772	0.0065	0.0069	0.0170
			(30.09)	*(10.06)*	*(16.12)*
High BM^P	57,986	1.1648	0.0108	0.0114	0.0264
			(40.07)	*(14.41)*	*(21.23)*
High BM^P – Low BM^L			**0.0179**	**0.0544**	**0.1099**
			(37.52)	*(22.18)*	*(30.63)*

Table notes:
This table presents buy-and-hold size-adjusted returns for the following windows: [-2, 0], [1, 60] and [1, 120], where 0 is the earnings announcement date of quarter *q*. t-statistics are in parenthesis. BM is the ratio of book-to-market value of equity (Compustat Quarterly data59 / (data61 * data14)) at the end of quarter *q-1*. In Panel A, the full sample (393,017 firm-quarter observations) is classified into five quintiles ranked from smallest BM (Low BM) to largest BM (High BM). The cut-off points are determined every quarter based on the distribution of BM in the corresponding quarter. In Panel B, the full sample, excluding zero profit firms, is partitioned into loss and profit firms (74,185 and 318,717 firm-quarter observations respectively). The BM quintiles are the same as in Panel A and are denoted Low BM^L to High BM^L (Low BM^P to High BM^P) for loss (profit) firms.

Table 11
Buy-and-Hold Size-Adjusted Stock Returns for Portfolios Formed on Earnings and Book-to-Market for the Period [1, 120]

		glamour		**BM Quintile**		*value*		
		Low BM	2	3	4	High BM	High BM – Low BM	
Negative Earnings Quintile	High Loss	-0.0936	-0.0728	-0.0740	-0.0379	-0.0395	**0.0541**	*(11.65)*
	2	-0.0967	-0.0644	-0.0665	-0.0317	-0.0359	**0.0608**	*(7.77)*
	3	-0.0836	-0.0749	-0.0471	-0.0528	-0.0390	**0.0446**	*(2.86)*
	4	-0.0650	-0.0593	-0.0401	-0.0444	-0.0302	**0.0348**	*(0.06)*
	Low Loss	-0.0333	-0.0501	-0.0446	-0.0103	-0.0157	**0.0176**	*(1.15)*
Positive Earnings Quintile	Low Profit	-0.0343	-0.0245	-0.0161	0.0019	0.0103	**0.0446**	*(7.25)*
	2	-0.0232	-0.0189	-0.0029	0.0081	0.0209	**0.0441**	*(10.37)*
	3	-0.0209	-0.0091	0.0044	0.0163	0.0347	**0.0556**	*(12.35)*
	4	-0.0091	0.0046	0.0202	0.0377	0.0653	**0.0744**	*(10.83)*
	High Profit	0.0173	0.0299	0.0604	0.0709	0.0852	**0.0679**	*(5.04)*
High Profit – Low Loss		**0.1109**	**0.1027**	**0.1344**	**0.1088**	**0.1247**		
		(15.15)	*(12.28)*	*(15.49)*	*(12.38)*	*(10.43)*		

High Profit & High BM^{P} – High Loss & Low BM^{L} = 0.1788
(17.35)

Table notes:
This table presents buy-and-hold size-adjusted returns for the window [1, 120], where day 0 is the earnings announcement date of quarter *q*. Earnings are earnings before extraordinary items and discontinued operations (Compustat Quarterly data8) in quarter *q* scaled by total assets in quarter *q-1* (Compustat Quarterly data44). BM is the ratio of book-to-market value of equity (Compustat Quarterly data59 / (data61 * data14)) at the end of quarter *q-1*. The full sample (393,017 firm-quarter observations) is partitioned into loss and profit firms. Loss (profit) firms are then classified into five quintiles from smallest earnings, High Loss (Low Profit), to largest earnings, Low Loss (High Profit). Independently, the full sample is also classified into five quintiles from smallest BM (Low BM) to largest BM (High BM) and then partitioned into loss and profit firms. The cut-off points for BM and earnings are determined every quarter based on the distribution of BM and earnings respectively in the corresponding quarter.

Table 12
Regressions of Buy-and-Hold Size-Adjusted Stock Returns on Loss/Profit, PEAD, Value-Glamour, and Accruals Strategies

Model: $CAR_{i,q,[1,120]} = a_0 + a_1{*}Loss\_Profit_{i,q} + a_2{*}SUE_{i,q} + a_3{*}BM_{i,q} + a_4{*}Accruals_{i,q} + e_{i,q}$

Variable	Expected Sign	Model I	Model II	Model III	Model IV
Panel A: Pooled Estimation					
Loss_Profit	+	0.0755	0.0613	0.0771	0.0832
		(50.80)	*(36.49)*	*(42.58)*	*(32.28)*
SUE	+		0.0482	0.0433	0.0429
			(29.14)	*(25.81)*	*(17.18)*
BM	+			0.0501	0.0439
				(28.39)	*(17.56)*
Accruals	–				-0.0490
					(-19.58)
Number of Observations		434,407	329,935	309,147	178,307
Adj. R^2 (%)		0.6	0.8	1.1	1.1
Panel B: Fama-MacBeth Estimation					
Loss_Profit	+	0.0749	0.0581	0.0719	0.0755
		(12.27)	*(10.85)*	*(12.86)*	*(7.93)*
SUE	+		0.0483	0.0429	0.0439
			(19.33)	*(16.74)*	*(11.41)*
BM	+			0.0454	0.0381
				(5.04)	*(2.99)*
Accruals	–				-0.0458
					(-11.63)
Number of Quarters		120	120	120	72
Average Number of Observation Per Quarter		3,620	2,749	2,576	2,476
Adj. R^2 (%)		1.1	1.5	2.7	2.6

Table notes:
Panel A presents the results for the pooled regression. Panel B presents the time-series means and t-statistics of the coefficients from the quarterly cross-sectional regressions (following the Fama-MacBeth, 1973, procedure). t-statistics are in parenthesis. $CAR_{i,q,[1,120]}$ is the buy-and-hold size-adjusted returns for the window [1, 120], where 0 is the earnings announcement date of quarter *q*. $Loss\_Profit_{i,q}$ is the quintile ranking of firm *i* based on earnings before extraordinary items and discontinued operations (Compustat Quarterly data8) in quarter *q* scaled by total assets in quarter *q-1* (Compustat Quarterly data44). $SUE_{i,q}$ is the quintile ranking of firm *i* based on standardized unexpected earnings in quarter *q* (generated using a seasonal random walk with drift model), calculated using diluted earnings per share excluding extraordinary items (Compustat Quarterly data9). $BM_{i,q}$ is the quintile ranking of firm *i* based on the ratio of book-to-market value of equity (Compustat Quarterly data59 / (data61 * data14)) at the end of quarter *q-1*. $Accruals_{i,q}$ is the quintile ranking of firm *i* based on accruals (Compustat Quarterly data76 – (data108 – data78)) in quarter *q* scaled by average total assets (Compustat Quarterly data44) in quarter *q*. The quintile rankings for all rank variables are determined every quarter based on the distribution of the underlying variables in the corresponding quarter. Each rank variable is scaled to range between zero and one.